

## APPENDIX A. KEYS TO SOME SENSITIVE SPECIES.

The following keys should aid in field identification of many of the species considered Sensitive herein, and some similar and/or co-occurring forms. It does not cover all species mentioned in this work, let alone all known to occur in Idaho. There are two basic keys: one each for terrestrial forms, including both shelled taxa and slugs and semislugs, and for freshwater taxa. Termination points are for specific taxon entries in the **SPECIES DISCUSSIONS** and, sometimes, for more common taxa likely to be encountered and confused with Sensitive taxa. To allow for coverage of Eastside Sensitive taxa and update of the Northern Spotted Owl lists, sets of keys for certain groups of species closely related to ROD forms; occurring in the same or nearby geographic areas; including several Sensitive forms; and/or readily capable of being confounded with them are provided after each basic key. Termination points with capital letters refer to these keys. It is wise to use both the species entry (in **SPECIES DISCUSSIONS**) and the secondary keys to minimize confusion. As always, consultation with a specialist may be necessary or prudent to permit secure identification.

Portions of certain of these keys have been adapted or modified from Frest & Johannes (1996a) or Frest & Johannes (1999c), whom I thank for permission to use this material. The full set is intended to cover the range of the Northern Spotted Owl as well as Eastside and Idaho taxa. Completely parochial keys have been deleted from this set. For the complete set, see Frest & Johannes (in press)

1. TERRESTRIAL SPECIES .....	A 3
A. Basic Key .....	A 3
G. Key to the Currently Known Species of <i>Hemphillia</i> .....	A 8
K. Key to Eastern WA Cascades <i>Oreohelix</i> Species .....	A 9
O. Key to the Species of <i>Prophysaon</i> .....	A 12
P. Key to Some Lower Salmon River-Hells Canyon Polygyrid Species ..	A 13
Q. Key to Some Lower Salmon River-Hells Canyon <i>Oreohelix</i> Species ..	A 15
R. Key to Northern Idaho <i>Cryptomastix</i> Species .....	A 18
S. Key to Northwest Species of <i>Pristiloma</i> and Related Genera .....	A 19
2. AQUATIC SPECIES .....	A 21
A. Basic Key .....	A 21

<b>E. Key to Extant Species of <i>Vorticifex</i></b>	.....	<b>A25</b>
<b>F. Key to Extant Species of <i>Lancidae</i></b>	.....	<b>A26</b>
<b>H. Key to some Western Species of <i>Amnicolinae</i></b>	.....	<b>A27</b>
<b>I. Key to Some Western US Valvatidae</b>	.....	<b>A29</b>

## 1. TERRESTRIAL SPECIES

### A. Basic Key

This key has been constructed so as to use shell features as much as possible, in order to be "field-friendly". Such features are best seen on "fresh" shells, i.e., those retaining the periostracum (outer organic pigmented shell layer): live adults are preferable. Note, however, that shell features are vicariant (may arise independently more than once or may be shared by genetically distantly related forms); and that actual family and generic diagnoses are based on anatomical, not shell, features. The very large number of terrestrial mollusk taxa inhabiting the geographic area covered here, plus the sizable number of undescribed and undiscovered species likely to occur, has prevented construction of a complete key to all mollusk taxa known from the Northwestern US.

Wherever possible, we make reference to the figures in the readily available, recent, and useful Burch & Pearce (1990), rather than create or reproduce such illustrative material here. See GLOSSARY for definitions of selected terms used here. Portions of this key derive, or are modified, from keys prepared by Roth (1996). In some cases, the basic key includes only ROD taxa, while detailed keys referenced therein may provide Sensitive, co-occurring, similar, or additional forms. Thus, some taxa will intentionally appear on more than one detailed key.

1	Animal a land gastropod lacking or with a vestigial external shell, with all organs contained in a slim, torpedo-shaped body (Burch & Pearce, 1990, fig. 9.17) .....	2
	Animal a snail (a land gastropod with a spirally coiled external shell large enough for the animal to withdraw into, the visceral organs contained in a coiled hump that occupies the upper whorls of the shell (Burch & Pearce, 1990, fig. 9.2) .....	6
2	Small external shell exposed at top of visceral hump [Burch & Pearce, 1990, fig. 9.105] .....	Genus <i>Hemphillia</i> : see key G
	Without even vestigial external shell .....	3
3	Breathing pore located in anterior half of right side of mantle (Burch & Pearce, fig. 9.19a) .....	4
	Breathing pore located in posterior half of right side if mantle (Burch & Pearce, 1990, 9.19b) .....	5

- 4 Dorsal posterior end of foot with a prominent mucus-secreting pit; animal not capable of self-amputating posterior one-sixth to one-third of tail when disturbed ..... Genus *Arion*. Introduced (no ROD species)  
 Dorsal posterior end of foot without a prominent mucus-secreting pit; animal capable of self-amputating posterior one-sixth to one-third of tail when disturbed ..... Genus *Prophysaon* (see *Prophysaon Key N*)
- 5 Body not keeled; mantle lacking concentric wrinkles ..... Genus *Anadenulus* (no ROD species)  
 Posterior end of body keeled; mantle with concentric wrinkles ..... Genus *Deroceras*: see **Key D**
- 6 Pedal grooves of foot conspicuous and well above angle of lateral and ventral foot margins (Burch & Pearce, 1990, fig. 9.21a); shell 5 mm or less in diameter, translucent pinkish- or olive-brown to colorless, surface glossy or silky, without prominent sculpture ..... 7  
 Pedal grooves of foot inconspicuous and in or close to angle of lateral and ventral foot margins (Burch & Pearce, 1990, fig. 9.21b); shell more than 5 mm in diameter, translucent to opaque, white to shades of brown and sometimes marked with color bands; surface glossy or matte, sometimes with bristles or scales on periostracum ..... 10
- 7 Shell with few (3 or less) rapidly enlarging whorls, very thin; aperture unusually large, larger than rest of shell when seen in side view (Burch & Pearce, 1990, fig. 9.109a) ..... Genus *Vitrina*: (no ROD species)  
 Shell with 3 or more whorls, which increase more slowly in size; shell not very thin; aperture smaller than rest of shell when seen in side view (Burch & Pearce, 1990, fig. 9.109b) ..... 8
- 8 Shell small, pupilliform; lip reflected [Burch & Pearce, 1990, fig. 9.6c] ..... Genera *Pupilla*, *Gastrocopta*, *Nearctula*, *Vertigo*: see *Nearctula* n. sp. 1  
 Shell heliciform or dome-shaped; lip straight [Burch & Pearce, 1990, figs. 9.6a, b] ..... 9
- 9 Shell with umbilicus, whorls regularly increasing to the last, which is considerably wider (Burch & Pearce, 1990, fig. 9.114a, 9.122, 9.127); sculpture sometimes consisting of well-spaced, collabral, incised striae; periphery (broadest part of shell) below middle when seen in side view; olive-brown to colorless ..... Genera *Glyphyalinia*, *Nesovitrea*, *Pristiloma* [in part]: non-ROD species  
 Shell imperforate, whorls regularly and rather closely coiled, the last not unduly wider (Burch & Pearce, 1990, fig. 9.114b); sculpture limited to weak ripples of growth below the suture, peripheral region and base smooth except for very weak lines of growth; periphery median in position; pinkish-brown (fading to pale brown) [southern Oregon Coast Range, although possibly more widely distributed] ..... Genus *Pristiloma* [in part]: see *Pristiloma arcticum crateris*
- 10 Outer lip reflected (Burch & Pearce, 1990, fig. 9.12c) ..... 13  
 Outer lip not reflected ..... 11

- 11 Shell thick, rather narrowly umbilicate, spire low conic, slowly increasing whorls; unmodified mature outer lip; periostracum inconspicuous; two thin color bands above & below periphery ..... Genus *Oreohelix*: see key K  
 Shell thin, broadly umbilicate, spire strongly depressed, closely coiled; thin yellow periostracum; mature lip modified or unmodified; no color banding ..... 12
- 12 Spire almost flat; very closely coiled, no mature outer lip modification; sculpture growth lines only ..... Genus *Megomphix*: see key H  
 Outer lip somewhat thickened at maturity (and upper part of peristome turned downward), but not reflected; shell strongly depressed, widely umbilicate (Burch & Pearce, 1990, fig. 9.10d); sculpture of closely-set, round-topped, collabral ribs, their tops cut by incised spiral striae ..... Genus *Ancotrema*: see Haplotremaid **Key B**
- 13 Body whorl constricted behind reflected lip (Burch & Pearce, 1990, fig. 9.180a) ..... 14  
 Body whorl not constricted behind reflected lip (Burch & Pearce, 1990, figs. 9.19a, b [left figs.], 9.192) ..... 25
- 14 Periostracum of adult lacking scales or persistent bristles .....  
 ..... Genus *Cryptomastix* (in part): see **Keys C, L, O, Q**  
 Periostracum of adult with scales or persistent hair or bristles ..... 15
- 15 Shell 10 mm or more in diameter; globose to depressed-helicoid; periostracum usually bearing bristles, often in dense pile; parietal lamella present or absent, lamellae absent from basal and outer lips ..... 16  
 Shell less than 10 mm in diameter; depressed-globose to nearly discoidal; periostracum with scales or bristles; parietal, basal, and palatal lamellae usually present (Burch & Pearce, 1990, fig. 9.160c), making aperture appear three-lobed ..... 20
- 16 Periostracum shiny, especially on base; bristles minute and stubble-like or absent ..... Genus *Vespericola* (in part), see **Key L**: 17  
 Periostracum matte; bristles short or minute ..... Genus *Vespericola* (in part), see **Key L**: 18
- 17 Small open umbilicus; greenish-brown to brown; depressed; thick penial sheath spire (Columbia Gorge, Oregon-Washington) .....  
 ..... *Vespericola depressus* (Pilsbry & Henderson, 1936)  
 Very small open umbilicus; tan to yellow-brown; subconic spire; typical penial sheath (Shasta Lake, California) ..... *Vespericola shasta* (Berry, 1921)
- 18 Bristles short, rather sparse over entire shell, diagonally arranged, most curving away from direction of coiling (Klamath Mts., California only) .....  
 ..... Genus *Vespericola* (in part); see key L: see *Vespericola pressleyi* Roth, 1985  
 Bristles short, dense over entire shell; spire low conic ..... Genus *Vespericola* (in part): 19
- 19 Diameter about 15 mm; parietal lamella vestigial .... *Vespericola eritrichius* (Berry, 1939)  
 Diameter about 20 mm; parietal lamella well-developed ..... *Vespericola euthales* (Berry, 1939)

20	Shell globose to depressed-globose to nearly discoidal; periostracum with scales or bristles; less than 3 apertural lamellae .....	21
	Shell globose to depressed-globose to nearly discoidal; periostracum with scales or bristles; 3 apertural lamellae .....	22
21	Shell with prominent parietal lamella; sparse but persistent bristles; umbilicus minute, generally covered .... <i>Cryptomastix germana germana</i> (Gould, 1851); see also Key L Shell lacking or with vestigial parietal lamella; sparse bristles generally not seen in adult; umbilicus small, only partly covered .....	<i>Vespericola sierranus</i> (Berry, 1921)
22	Shell nearly discoidal; with bristles .....	Genus <i>Trilobopsis</i> (in part): 23
	Shell globose to depressed globose; scales but no bristles .....	Genus <i>Trilobopsis</i> (in part); see also Key L: 24
23	Periostracum with short, erect, well-spaced bristles when not eroded; umbilicus open, flat-bottomed, contained about 4 times in diameter (vicinity of Shasta Lake, California only) .....	<i>Trilobopsis roperi</i> (Pilsbry, 1889); see also Key M
	Periostracum with minute, sparse bristles (usually lost by abrasion) and low papillae; base spirally striate; umbilicus contained about 5 times in diameter (n. end of Great Valley of California) .....	<i>Trilobopsis tehamae</i> (Pilsbry, 1928); see also Key M
24	Shell subangular at shoulder; umbilicus minute, completely covered .....	<i>Trilobopsis trachypepla</i> (Berry, 1933); see also Key L
	Shell subangular at periphery; umbilicus small, partly covered .....	<i>Trilobopsis</i> n. sp. 1 ; see also Key L
25	Shell depressed-helicoid, pale pinkish tan under a straw-colored to golden brown periostracum; with a single, narrow spiral band above the periphery but without additional color bands or patches; sculpture complex, including malleation and coarse collabral rugae more or less cut by incised diagonal or spiral striae; mucus glands 2, membranous, enveloping lower reproductive tract, feeding by way of paired mucus bulbs through a common duct to base of dart sac; dart sac seated on elongate extension of atrium (Burch & Pearce, 1990, fig. 9.26b, in part: mucous bulbs mislabeled as "mucous glands"); spermathecal duct bearing long diverticulum (California to southern Oregon) .....	26
	Shell broadly conic to depressed; variably colored, with ground color ranging from straw-colored to reddish-brown, with light reddish brown band on shoulder, strongly colored peripheral band, and distinct dark brown basal patch (Subgenus <i>Monadenia</i> , s.s.) (Burch & Pearce, 1990, fig. 9.191a), or ground color white or light tan, spire and shoulder pale to reddish brown, usually with darker radial streaks and poorly defined zone of darker color on base (subgenus <i>Shastelix</i> ); surface smooth or covered with minute papillae; mucus gland single, feeding by stout duct to base of dart sac; dart sac seated on broadly expanded atrium; spermathecal duct without diverticulum (Burch & Pearce, 1990, fig. 9.189b) .....	27

- 26 Post-embryonic sculpture of smooth, regular, rib-like, convex-forward collabral rugae, disrupted at about the onset of the body whorl by malleation; malleation weaker on base, often not present on shoulder until last half-turn (Siskiyou Co., California to south-central Oregon) ..... see *Helminthoglypta hertleini* and similar species: **Key E**  
 Post-embryonic sculpture of coarse collabral striae, incised from fourth whorl on by fine spiral striae and disrupted by irregular malleation; striae strongest on shoulder of body whorl; body whorl sometimes nearly smooth, especially below periphery (Klamath Mts., California) ..... see *Helminthoglypta talmadgei* and similar species: **Key F**
- 27 Epiphalllic caecum about as long as penis plus epiphallus, straight .....  
 ..... (Subgenus *Monadenia*, s.s.) 28  
 Epiphalllic caecum 1.5 or more times as long as penis plus epiphallus, helically coiled .....  
 ..... (Subgenus *Shastelix*) 29
- 28 Shell 18-26 mm in diameter; first 1-2 whorls with scattered round papillae; verge globose-cylindrical, abutting single large pilaster in wall of penis (Shasta R. canyon, Siskiyou Co., California only) ..... see *Monadenia chaceana* and similar species **Key I**  
 Shell 24-37 or more mm in diameter; sculpture not including papillae; verge cylindrical or club-shaped, not abutting penial pilaster (Klamath Mts. only) ..... see *Monadenia fidelis* **Key I**
- 29 Papillation strong over entire shell; surface glossy to matte (Trinity to Tehama cos., California only) ..... see *Monadenia churchi* and similar species **Key J**  
 Papillation restricted to first 3-4 whorls, shell smooth thereafter; surface glossy (Shasta Lake, California vicinity only) ..... see *Monadenia troglodytes* and similar species **Key J**

## G. Key to the Currently Known Species of *Hemphillia*

As with other Pacific NW endemic mollusk genera, the roll of extant *Hemphillia* species is likely to grow with time. This key is intended for use only with fully adult specimens. Note that color varies in many slug species, with unusually yellow (xanthic), albino (relatively melanin-free), or melanistic (more than typically black-pigmented) individuals the most likely to be encountered.

- |   |   |  |
|---|---|--|
| 1 | Body short, keeled posteriorly; anterior depression for visceral mass (like Pilsbry, 1948, fig. 397a) .....   | 2                                      |
|   | Body long, worm-like; no posterior keel, no anterior depression for visceral mass (like Burch & Pearce, 1990, fig. 9.105) .....   | 4                                      |
| 2 | Mantle covering posterior part of visceral pouch; caudal horn small or absent; body ground color white; head dark; no dorsal stripe .....   | 3                                      |
|   | Mantle not covering visceral pouch; caudal horn large, distinct; body ground color off-white; head pale; dorsal stripe white ..... <i>pantherina</i> Branson, 1972  |  |
| 3 | Visceral pouch papillate; penial stimulator rugose internally; body ground color white with indistinct blue-black markings posteriorly..... <i>glandulosa</i> (Binney & Binney, 1872)   |  |
|   | Visceral pouch nearly smooth; penial stimulator smooth internally; color as above but with distinct blue-black markings; posterior with spaced black lines terminating in round dots ..... <i>burringtoni</i> (Pilsbry, 1948) |  |
| 4 | Penis narrow, with accessory sac .....  | <i>danielsi</i> Vanatta, 1914          |
|   | Penis broad, lacking accessory sac .....  | 5                                      |
| 5 | Tail with distinct caudal horn .....  | 6                                      |
|   | Tail lacking distinct caudal horn .....   | 7                                      |
| 6 | Body ground color white with black to bluish-black markings; no dorsal streak .....   |  |
|   | ..... <i>dromedarius</i> Branson, 1975  |  |
|   | Body ground color off-white (gray) with even, darker gray dorsal surface .....  | n. sp. 1                               |
| 7 | Body ground color yellow-orange; dorsal streak same as groundcolor; mantle markings weak to moderate; head with dark tentacles and central narrow dark band only; U-shaped band of tubercles on posterior mantle .....        | <i>malonei</i> n. subsp. 1             |
|   | Body ground color light tan; whole head dark or with numerous black bands; no U-shaped band of tubercles on posterior mantle .....  | 8                                      |
| 8 | Sperm duct opening near base of verge; penial retractor attached to penis and epiphallus; with darker brown thin dorsal streak posteriorly, bordered by broad weak blackish stripes; mantle markings weak, indistinct .....   |  |
|   | ..... <i>malonei malonei</i> Pilsbry, 1917  |  |
|   | Sperm duct opening near apex of verge; penial retractor attached to epiphallus only; blackish markings distinct on mantle and on posterior of body; dorsal streak comparatively broad, same color as groundcolor .....        | <i>camelus</i> Pilsbry & Vanatta, 1897 |

### K. Key to Eastern WA Cascades-Columbia Gorge *Oreohelix* Species

This key is useful for the Deschutes R. (Oregon)drainage; eastern Columbia Gorge, Washington and Oregon; and Washington eastern Cascades; note that it does not apply to northeastern Washington, nor to the Blue Mountains (Oregon-Washington). As with some of the foregoing groups, novelties here are quite possible; and some forms are quite variable. Consultation with a specialist may be useful.

- 1 Spire strongly depressed, almost flat ..... 2  
Spire taller; low conic to depressed ..... 3
- 2 Diameter more than 3 cm; upper surface often relatively even brown, purplish brown, or white ..... *junii* of authors  
Diameter usually about 2 cm; upper surface dirty whitish, often with few, narrow brown bands ..... *Oreohelix* n. sp. 26 Frest & Johannes, 1995a
- 3 Shell surface strongly but irregularly rugose ..... 4  
Shell surface comparatively smooth- slightly rugose ..... 5
- 4 Shell often bandless; irregular purplish-brown flammules on both surfaces .....  
..... *O. variabilis variabilis*  
Shell generally with typical two color bands present ..... *O. variabilis* n. subsp. 1
- 5 Shell >20 mm in diameter; adult periphery slightly angular; surface rough; growth lines evident; spiral striation weak; no periostracal lirae on adult; narrow umbilicus, 1/5 shell diameter ..... *Oreohelix* n. sp. 2 Frest & Johannes, 1995a  
Shell < 20 mm diameter; periphery rounded; surface comparatively smooth, rather evenly evenly striate throughout; weak periostracal lirations on both surfaces of adults; umbilicus 1/4 maximum shell diameter ..... *Oreohelix* n. sp. 1 Frest & Johannes, 1995a

## O. Key to the Species of *Prophysaon*

The following key is based primarily upon external features in order to facilitate field identification. A partial key based on anatomical characters is given in Roth (1993); in the long run, these will likely constitute the backbone of a more substantive classification. As noted by Pilsbry (1948,p. 680), “[t]he number of species of *Prophysaon* is still uncertain. Only superficial characters were given by Binney and Cockerell for part of their named forms, which cannot be determined until specimens from the type localities are dissected. The genus deserves careful study by West Coast malacologists, as part of the species now recognized are quite imperfectly known, and others are likely to turn up.” Recent treatments (Branson, 1977, 1980) have so far not further clarified this genus’ position and morphology. The species recognized below are certainly distinct taxonomic entities; but the proper names for some may change with further study. Note that *Prophysaon*, like *Arion*, has several taxa with greatly varying color, while others are very conservative. Xanthic, albino, and melanistic individuals occur not uncommonly in *P. andersoni* and *P. foliolatum* populations, e.g., while *P. coeruleum* and *P. dubium* seem much less variable.

1	Body without even weak dorsal line or band on posterior portion of body .....	2
	Body with dorsal line or band on posterior portion of body .....	4
2	Ground color even blue or gray .....	3
	Ground color purplish or pinkish gray with darker irregular mantle markings and distinct lighter-colored papillae, comparatively widely spaced; distinct longitudinal grooves; size to 40 mm .....	<i>P. dubium</i> Cockerell, 1890
3	Ground color blue or bluish gray; integument with distinct wide-spaced longitudinal grooves; size to 43 mm; papillae small, dense, over whole body; sole light .....	<i>P. coeruleum</i> Cockerell, 1890
	Ground color even gray (no blue pigment granules); longitudinal and transverse grooves numerous but indistinct; size to 70 mm; papillae indistinct or absent; sole gray .....	<i>Prophysaon</i> n. sp. 2
4	Dorsal band dark .....	5
	Dorsal band pale .....	10

5	Dorsal band wide, weak; blunt triangular in shape, bordered by light bands, followed by distinct black bands (3-banded) .....	8
	Dorsal band narrow ; markings often cloudy and indistinct.....	6
6	Body long, worm-like when extended; sole dark gray .....	7
	Comparatively stout body; markings light and indistinct; longitudinal grooves distinct; sole brown .....	<i>P. boreale</i> Pilsbry, 1948
7	Dorsal band distinct; bordering bands distinct but narrow; very long, worm-like body; markings often cloudy and indistinct, but dark; longitudinal grooves distinct; sole dark gray; ground color medium gray; body finely papillose when contracted; nearly smooth when extended.....	<i>P. obscurum</i> (Cockerell, 1893)
	Dorsal band indistinct; bordering bands indistinct; markings often cloudy and indistinct; longitudinal grooves indistinct; sole nearly black; ground color dark gray-black; body strongly papillose when contracted; rugose even when extended ..	<i>Prophysaon</i> n. sp. 3
8	Ground color generally pink; often with distinct reddish-scarlet or orange-red blush on dorsal surface of tail posteriorly; mantle markings usually irregular blackish patches .....	
	.....	<i>P. vanattae</i> Pilsbry, 1948
	Ground color white, smoky light gray or tan ; mantle markings including distinct lateral black stripes .....	9
9	Ground color white; black markings distinct on body and mantle; CA .....	
	.....	<i>P. fasciatum</i> Cockerell, 1890
	Ground color smoky light gray; ID .....	<i>P. humile</i> Cockerell, 1890
10	Dorsal band indistinct .....	11
	Dorsal band distinct .....	13
11	Groundcolor light tan; mantle and posterior dorsal body spotted with black; no obvious mantle bands; reticulations distinct, rather widely spaced ; no obvious posterior lateral bands .....	<i>Prophysaon vanattae pardalis</i> (Pilsbry, 1948)
	Groundcolor light fawn, pinkish, or yellow; body not maculate .....	12
12	Ground color light fawn-pinkish; paired narrow yellow bands laterally on mantle edge; weak yellow bands ventrally on anterior portion of body; mantle bands generally broken into patches; much of posterior body behind distinct abscission zone; reticulations thin but distinct; intervening pathces narrower than in <i>andersoni</i> ; slime clear .....	
	.....	<i>P. foliolatum</i> (Gould, 1851)
	Like above, except that ground color yellow .....	
	.....	<i>P. foliolatum</i> (Gould, 1851) unnamed color variety
13	Dorsal band pinkish brown-fawn; lateral mantle bands distinct; reticulations strong, dark; posterior banding indistinct or absent; slime yellow; ground color pinkish brown-fawn .....	<i>P. andersoni</i> (Cooper, 1872)
	Dorsal band yellow .....	13

- 13 Ground color off-white suffused with yellow; distinct yellow bands ventrally both anteriorly and posteriorly; reticulations strong, dark; posterior dark coloration distinct; size to 100 mm; slime colorless ..... *Prophysaon* n. sp. 1  
Ground color yellow-white; lateral mantle bands indistinct-distinct; reticulations strong, dark; posterior banding indistinct or absent; slime yellow; whole slug upper surface dark; sometimes making mantle banding and reticulations obscure; yellow coloration as narrow lateral bands at base of foot and sometimes lateral edges of mantle; sometimes yellow spot at posterior mantle edge ..... *Prophysaon andersoni* unnamed color variety

## P. Key to Some Lower Salmon River-Hells Canyon Polygyrid Species

The following key is intended to cover currently known polygyrid species from the River of No Return through the Lower Salmon River to about Asotin Co., Washington, including portions of Hells Canyon as far south as Ontario, Oregon. This latter area is incompletely known, however; and new taxa could also still be found in the Lower Salmon River area despite intensive search by Frest & Johannes (1995b). The key applies only to live adult material. As with other difficult groups embracing undescribed species, it is wise to consult a specialist for many of these taxa.

- |   |  |   |
|---|--|---|
| 1 | Shell large (>20 mm diameter) .....  | 2   |
|   | Shell smaller (< 20 mm diameter) .....   | 5   |
| 2 | Shell large, dome-shaped .....   | 3   |
|   | Shell greenish, depressed; apertural lip prominent, white; three apertural lamellae .....  |   |
|   | ..... <i>Allogona (A.) ptychophora solida</i> Vanatta, 1924  |   |
| 3 | Shell surface malleate; modified apertural lip and lamellae present .....  | 4   |
|   | Shell surface almost smooth; thin; yellow with reddish bands; garlic smell to live animal; whorls convex; suture deeply impressed; apertural lip unmodified; no lamellae ..... |   |
|   | ..... <i>Anguispira kochi occidentalis</i> (Von Martens, 1882)   |   |
| 4 | Shell smaller; weakly malleate; tan, yellow-tan, or orange .....   |   |
|   | ..... <i>Allogona (A.) ptychophora ptychophora</i> (Brown, 1870)   |   |
|   | Shell large, strongly malleate, dark red to reddish brown .....  |   |
|   | ..... <i>Allogona (A.) lombardii</i> Smith, 1943   |   |
| 5 | Male with relatively thick, heavy penial sheath .....  | subgenus <i>Bupiogona</i> : 6                   |
|   | Male with relatively thin penial sheath .....  | subgenus <i>Cryptomastix</i> : 8                |
| 6 | Shell large, to 17 mm diameter .....   | 7   |
|   | Shell small, to 13 mm diameter; with very low, flattened spire; sutures barely impressed; 5 1/2 whorls; shell color light brown .....  | <i>Cryptomastix (B.)</i> n. sp. 2               |
| 7 | Shell greenish-yellow, lip white; thin, barely recurved edge; 5 1/2 whorls; suture distinctly impressed; both surfaces gently convex .....                                     | <i>Cryptomastix (B.)</i> n. sp. 1               |
|   | Shell wine red; lip brown, strongly revolute; spire strongly depressed; suture moderately impressed; 5 whorls .....  | <i>Cryptomastix (B.) populi</i> (Vanatta, 1924) |
| 8 | Shell small, less than 17 mm diameter .....  | 9   |
|   | Shell larger, 18-20 mm diameter .....  | 16  |

- 9 Shell about 8-10 mm in diameter; nearly flat spire; not setose; white, strongly tridentate aperture; aperture narrow, prosocline; strongly constricted just behind lip; lip L-shaped ..... *Cryptomastix (C.) n. sp.* 3  
 Shell larger ..... 10
- 10 Shell barely medium-sized (10-13 mm diameter) ..... 11  
 Shell larger ..... 13
- 11 Apertural lip broad, white; nonrevolute; tridentate; shell depressed conic; with short and sparse but persistent setae; color yellowish red .....  
 ..... *Cryptomastix (C.) mullani latilabris* (Pilsbry, 1940)  
 Apertural lip narrow ..... 12
- 12 Shell low dome-shaped; diameter about 13 mm; color medium-dark brown; lip white; strongly tridentate; revolute all around, including base; shell not hirsute; 4 1/2 whorls ..... *Cryptomastix (C.) n. sp.* 2  
 Spire strongly depressed; diameter about 13 mm; color light brown; aperture slightly inclined; lip narrow; moderately tridentate; not L-shaped; palatal lamella relatively strong; moderately revolute except basally; very sparsely hirsute, with adults typically lacking periostracal setae; 4 1/2-5 fairly rapidly expanding whorls .....  
 ..... *Cryptomastix (C.) harfordiana* (Binney, 1878)
- 13 Spire strongly depressed ..... 14  
 Spire low dome-shaped; 13-16 mm diameter; umbilicus distinct, small, partly covered; 5 1/2-6 whorls; lip white, moderate width, distinctly tridentate but palatal small, basal lamelliform ..... *Cryptomastix (C.) mullani mullani* (Bland & Cooper, 1861)
- 14 Shell diameter about 14-16 mm; no or trace setae; blue-gray color ..... 15  
 Shell about 15-17 mm in diameter; low subdiscoidal; distinctly hirsute, with close, very short setae; dark brown; blackbody; relatively large, open umbilicus; weakly tridentate narrow lip ..... *Cryptomastix (C.) mullani clappi* (Hemphill, 1897)
- 15 Palatal present but always weak; mantle lightly spotted; basal and palatal weak .....  
 ..... *Cryptomastix (C.) n. sp.* 5  
 Palatal generally absent or vestigial; mantle uniform black; basal and palatal vestigial ..... *Cryptomastix (C.) n. sp.* 6
- 16 Shell with columellar lip mostly or completely covering umbilicus; diameter generally 15-18 mm; globosely depressed; sparsely hirsute; lip relatively broad; white; edge slightly revolute; parietal moderately prominent; basal weakly developed; palatal absent .....  
 ..... *Cryptomastix (C.) mullani hemphilli* (Binney, 1886)  
 Shell with umbilicus only partly covered by columellar lip; diameter usually 16-20 mm; more depressed than *hemphilli*; lip white, narrower than in *hemphilli*; edge strongly revolute; very sparsely hirsute; lamellae as in *hemphilli* .....  
 ..... *Cryptomastix (C.) mullani olneyae* (Pilsbry, 1891)

## Q. Key to Some Lower Salmon River-Hells Canyon *Oreohelix* Species

*Oreohelix* is especially characteristic of the Lower Salmon River-Hells Canyon area and exceptionally diverse there. This key covers currently known Lower Salmon River species from the River of No Return to the mouth. Coverage of Hells Canyon is less complete, with the south canyon; the area from the mouth of the Salmon to the junction of the Snake with the Clearwater; and the Pittsburg Landing area being best known. Other species are likely to be discovered with more thorough survey of Hells Canyon. Species are best discriminated by soft anatomy; but in a given endemic swarm shell characters may be sufficient. As with other speciose genera, consultation with an experienced malacologist is *de rigueur*. This key should not be applied outside of the intended, narrowly specified area. See Frest & Johannes (1995b) for more detailed description of areas covered and Frest & Johannes (1995a) and this work for discussion of other areas of intense *Oreohelix* speciation.

- |   |  |    |
|---|--|----|
| 1 | <i>Oreohelix</i> with numerous intersecting prominent transverse ribs and spiral lirae; moderately high, dome-shaped shell; bands obsolete to weakly developed ..... |    |
|   | ..... <i>Oreohelix haydeni perplexa</i> Pilsbry, 1939  |    |
|   | ..... <i>Oreohelix</i> lacking one or both prominent transverse ribs and spiral lirae .....  | 2  |
| 2 | <i>Oreohelix</i> with relatively smooth shell (prominent ribs and lirae lacking) .....   | 3  |
|   | ..... <i>Oreohelix</i> with relatively prominent sculptural elements of one type .....   | 11 |
| 3 | Shell relatively high-spired; domed to depressed, even-sided spire .....   | 6  |
|   | Shell relatively low-spired; upper surface strongly depressed .....  | 4  |
| 4 | Shell quite large (to 40 mm diameter); low-spired; bands well developed; secondary bands also typically present, particularly on lower surface .....                 | 1  |
|   | ..... <i>O. strigosa</i> n. subsp. 1   |    |
|   | ..... Shell smaller; upper surface less convex .....   | 5  |
| 5 | Shell banded; large (to 30 mm diameter); relatively smooth; color bands as usual for genus .....   | 1  |
|   | ..... <i>Oreohelix jugalis</i> (Hemphill, 1890)  |    |
|   | ..... Shell with bands weakly developed; irregular brown-purple pigment in small patches, particularly on upper surface; smaller than <i>jugalis</i> .....           | 15 |
| 6 | Spire dome-shaped .....  | 8  |
|   | ..... Spire even-sided .....   | 7  |
| 7 | Shell smaller, diameter 12-18 mm; definitely angular periphery; very wide umbilicus; striation well-developed; no brown patch around umbilicus .....                 | 21 |
|   | ..... Shell diameter 23-25 mm; weakly angular periphery; striation patchy; brown color patch around umbilicus .....  | 23 |

8	Periphery angular; striation very well-developed over whole shell surface .....	
	..... <i>Oreohelix strigosa goniogrya</i> Pilsby, 1934	
	Periphery rounded .....	9
9	Spire distinctly dome-shaped, especially in initial whorls; fine, more or less regular, closely spaced transverse ribs as in <i>peripherica</i> ; fairly well-developed striation .....	
	..... <i>Oreohelix</i> n. sp. 22	
	Spire more subturbinate; surface nearly smooth .....	10
10	Shell with principal color bands faint, sometimes interrupted; both whorl surfaces with varying amounts of purple-brown suffusion spiral striation and growth lines faint .....	
	..... <i>Oreohelix</i> n. sp. 25	
	Shell with principal color bands thin but definite; rest of shell surface typically chalky white except for faint brown suffusion above upper color band; spiral striation absent .....	
	..... <i>Oreohelix</i> n. sp. 29	
11	Shell with relatively prominent ribs .....	18
	Shell with relatively prominent lirae .....	12
12	Lirae fairly coarse; no periostracal fringes on lirae .....	16
	Lirae very fine; periostracal fringes on lirae .....	13
13	Shell with angulate periphery .....	14
	Shell with convex periphery; comparatively small (< 12 mm); low spire; coloration somewhat similar to <i>O. waltoni</i> ; periostracal fringes and lirae subdued .....	
	..... <i>Oreohelix</i> n. sp. 24	
14	Shell with strongly angulate periphery, strongly depressed biconvex); no color bands; greenish yellow; thin; strong peripheral keel with periostracal fringe; very wide umbilicus .....	
	..... <i>Oreohelix</i> n. sp. 8	
	Shell with more weakly angulate periphery, without peripheral keel; shell solid; comparatively narrow umbilicus; dome-shaped rather than biconvex .....	15
15	Shell low, dome-shaped; bands distinct, generally reddish purple above; diameter 13-18 mm; closely coiled; sutures slightly impressed .....	
	..... <i>Oreohelix vortex</i> Berry, 1932	
	Shell more convex, dome-shaped; color bands obsolete; diameter 10-12 mm; closely coiled; rough upper surface; sutures distinctly impressed .....	
	..... <i>Oreohelix</i> n. sp. 32	
16	Shell with pronounced peripheral keel and lira; strong lirae in moderate numbers; strongly biconvex, very strongly depressed .....	17
	Shell with strong peripheral angulation but no peripheral lira; upper and lower surfaces with numerous, thread-like lirae; basal keel present .....	
	..... <i>Oreohelix</i> n. sp. 17	
17	Very coarse, irregular surface and lirae; basal keel present .....	
	Lirae and surface more regular; no basal keel; very strongly depressed shell .....	
	..... <i>Oreohelix haydeni hesperia</i> Pilsby. 1939	
18	Ribs very distinct, strongly raised, not numerous .....	19
	Ribs comparatively shallow, numerous .....	
19	Shell high dome-shaped; small umbilicus .....	20
	Shell lower; large open umbilicus .....	22

- 20 Rounded periphery; no peripheral rib ; weak 2 bands; shell high dome-shaped; weak striation..... *Oreohelix* n. sp. 30  
 Subangular periphery; bardless ..... 21
- 21 No peripheral rib on adult; ribs prominent, white, widely spaced; interareas brown; moderately strongly striate ..... *Oreohelix idahoensis idahoensis* (Newcomb, 1866)  
 Subrounded periphery; weak peripheral rib; lower shell; larger umbilicus .....  
 ..... *Oreohelix idahoensis baileyi* (Bartsch, 1916)
- 22 Shell periphery subangular-angular ..... 23  
 Shell periphery rounded; banded ..... 26
- 23 Shell strongly depressed; angular; distinct peripheral rib; large umbilicus ..... 24  
 Shell with low spire; subangular periphery; relatively small umbilicus ..... 25
- 24 Shell small (diameter to 13 mm); with closely spaced but still distinct, sharp ribs .....  
 ..... *Oreohelix* n. sp. 14  
 Shell larger (diameter >20 mm); with broad, relatively low, distantly spaced ribs .....  
 ..... *Oreohelix hammeri* Fairbanks, 1984
- 25 Shell with definitely subangular periphery; distinct peripheral rib; more or less turbiniform; small umbilicus; ribs more closely spaced than in *idahoensis* ..... *Oreohelix* n. sp. 18  
 Shell with subangular periphery; no or vestigial peripheral rib; low turbiniform; larger umbilicus than *idahoensis* or n. sp. 18; little spiral striation; much smaller than *idahoensis*; rib spacing intermediate between *idahoensis* and n. sp. 18 ..... *Oreohelix* n. sp. 20
- 26 Shell comparatively large; diameter 16 mm or more; low-medium conical ..... 27  
 Shell comparatively small; diameter less than 16 mm; low-depressed conical ..... 28
- 27 Spire relatively low; ribs coarse, somewhat irregular; equal on both surfaces; comparatively wide umbilicus; diameter about 16 mm ..... *Oreohelix* n. sp. 13  
 Spire relatively high; ribs coarse; more distinct on upper surface; large but more well-like umbilicus; diameter about 22 mm ..... *Oreohelix* n. sp. 12
- 28 Shell with subangular periphery; generally with two broad color bands; low spire; diameter 13-16 mm; strongly deflected final quarter whorl .... *Oreohelix intersum* (Hemphill, 1890)  
 Shell with evenly convex-barely subangular periphery ..... 29
- 29 Shell small (13 mm diameter); depressed spire; broad white color band on upper surface; relatively coarse ribs; very broad, open umbilicus ..... *Oreohelix waltoni* Solem, 1975  
 Shell small (13 mm diameter); low conical spire; upper surface reddish-brown with white transverse ribs; smaller umbilicus ..... *Oreohelix* n. sp. 19

## R. Key to Northern Idaho *Cryptomastix* Species

This key is intended for use only with fresh adult shells. It is most useful in northern Idaho, that is, those portions of Idaho north of the Clearwater River drainage. It also applies to adjoining portions of Washington and Montana. For species elsewhere in Idaho, see **Key P.** Columbia Gorge species are also included in **Key P.** Westside taxa make up a part of **Key C**, which also includes the Columbia Gorge taxa. Note that these forms are rather similar, and that new forms are quite possible in this area. Difficult cases should be referred to a specialist.

- |   |   |   |
|---|---|---|
| 1 | Spire comparatively convex; lip with three rather strong lamellae; umbilicus partly covered .....   | 2   |
|   | Spire comparatively flat, lamellae variable ; umbilicus variable .....  | 4   |
| 2 | Teeth very strongly developed, especially parietal; aperture largely closed .....   | 3   |
|   | Teeth strongly developed, but aperture largely open .....   | .....   |
|   | <i>Cryptomastix (C.) mullani mullani</i> (Bland & Cooper, 1860)   |   |
| 3 | Shell not hirsute; convex above; lip white, revolute, comparatively wide; 5 1/2-6 whorls .....  | <i>Cryptomastix (C.) sanburni</i> Binney, 1886                    |
|   | Shell sparsely hirsute; spire depressed conic; lip white; scarcely revolute; 4 1/2-5 1/2 whorls .....   | <i>Cryptomastix (C.) magnidentata</i> (Pilsbry & Henderson, 1930) |
| 4 | Adult distinctly hirsute .....  | 5   |
|   | Adult scarcely or not at all hirsute .....  | 6   |
| 5 | Strongly hirsute; small open umbilicus; diameter about 11 mm; lip brown, narrow, slightly revolute; distinctly tridentate .....   | <i>Cryptomastix (C.) n. sp.</i> 1                                 |
|   | Hairs scale-like; umbilicus partly covered; diameter about 13 mm; lip light brown; moderate width; small or no parietal; basal present; no palatal .....  | .....   |
|   | <i>Cryptomastix (C.) mullani tuckeri</i> (Pilsbry & Henderson, 1930)  |   |
| 6 | Lip narrow, revolute, white; small nodular parietal; small, tooth-like basal; no palatal; depressed conic shell; scarcely or not at all hirsute; brown-reddish-brown; umbilicus partly covered .....  | <i>Cryptomastix mullani blandi</i> (Hemphill, 1892)               |
|   | Lip moderately wide .....   | 7   |
| 7 | Shell with columellar lip mostly or completely covering umbilicus; diameter generally 15-18 mm; globosely depressed; sparsely hirsute; lip relatively broad; white; edge slightly revolute; parietal moderately prominent; basal weakly developed; palatal absent; color russet .....               | <i>Cryptomastix (C.) mullani hemphilli</i> (Binney, 1886)         |
|   | Shell with umbilicus only partly covered by columellar lip; diameter usually 16-20 mm; more depressed than <i>hemphilli</i> ; lip white, narrower than in <i>hemphilli</i> ; edge strongly revolute; very sparsely or not at all hirsute; lamellae as in <i>hemphilli</i> ; color green-brown ..... | <i>Cryptomastix (C.) mullani olneyae</i> (Pilsbry, 1891)          |

## S. Key to Northwest Species of *Pristiloma* and Related Genera

This key may be helpful in identification of fresh adult shells of *Pristiloma* and *Ogaridiscus*. It is intended to apply mostly to Washington, Oregon, Idaho, and western Montana. Northern California has additional taxa, including undescribed forms. Juveniles in this species group can be quite difficult to identify. These small taxa may require expert consultation for reliable identification. At present, there are five subgenera in *Pristiloma* (*Pristiloma*, *Pristinopsis*, *Pristinoides*, *Priscovitreops*, *Priscovitrea*); we regard *Ogaridiscus* as a full genus, following Riedel (1980). Shell features are especially subtle here, so that anatomic features should be the primary discriminants. Additional taxa are possible in the Pacific Northwest as well.

1	Shell imperforate .....	2
	Shell rimate, perforate or umbilicate .....	9
2	Spire nearly flat; whorls 3 1/2-4; last whorl rapidly expanding; diameter less than 2.5 mm .....	<i>Pristiloma (Priscovitreops) johnsoni</i> (Dall, 1895)
	Spire more distinctly conoid .....	3
3	Spire with very convex base .....	4
	Spire with less convex-flattened base .....	
4	Growth lines distinct .....	5
	Growth lines indistinct .....	6
5	Spire moderately depressed; 6 1/2-7 whorls at 3.5-3.8 mm; close but distinct growth wrinkles; cinnamon to orange-brown shell .....	<i>Pristiloma (Pristiloma) stearnsi</i> (Bland, 1875)
	Spire more depressed; 6 1/2 whorls at 3.4 mm; deep radial sulci and nodulose sculpture; light horn shell .....	<i>Pristiloma (Pristiloma) pilsbryi</i> Vanatta, 1899
6	Aperture with finely denticulate basal lamella; 5 1/2 evenly expanding whorls at 2.5 mm diameter; medium to dark horn-colored; periphery slightly shouldered above the median; base convex; excavated around the umbilicus; aperture rounded lunate .....	<i>Pristiloma (Pristinoides) lansingi</i> (Bland, 1875)
	Aperture lacking basal lamella .....	7
7	6 or more narrow, evenly expanding whorls at 3.4 mm; shell color yellowish corneous; periphery high and distinctly shouldered; convex base only barely excavated at axis; aperture very narrowly lunate .....	<i>Pristiloma (Pristinopsis) idahoense</i> Pilsbry, 1902
	Less than 6 whorls .....	8



## B. AQUATIC SPECIES

### A. Basic Key

Note that some of these characters are discernible only from live, properly relaxed and preserved specimens. This key has been based on shell characters to the maximum extent possible; but actual family and generic discriminants are based quite properly on anatomical characters. As with the preceding keys, terminations in taxon names refer to species in the **SPECIES DISCUSSIONS** or related, non-sensitive taxa, while capital letters relate to following secondary keys. The situation here is comparable to that noted previously with terrestrial taxa, in that the total number of species, including undescribed and yet to be discovered forms, and scarcity of morphological information for some precluded construction of a completely comprehensive key. Where possible, reference is made to figures in Burch (1989) to illustrate particularly important or basic morphological features. See **GLOSSARY** also.

This basic key was originally intended to cover mostly ROD species. Expansion here has made it necessary to include other taxa. In some cases, more detailed keys to particular genera, subfamilies, or families follow the basic key, especially when such groupings include several Sensitive species. In all such cases, reference is made to the detailed key at the highest taxonomic level practical in the basic key.

1	Shell with horny operculum .....	2
	Shell lacking operculum .....	14
2	Operculum round, multispiral; nucleus central; shell thin, small (to 5 mm), usually depressed, semitransparent; single bipectinate gill to left and single pallial tentacle to right of mantle cavity ..... Family Valvatidae (no ROD species)	
	Operculum oval; generally paucispiral, excentric; gill monopectinate; pallial tentacle absent; shell generally comparatively thick (opaque) .....	3
3	Adult shell medium-large size (over 1.5 cm); generally elongate; males lack verge .....	
	..... Family Pleuroceridae: <i>Juga</i> : 4: see also <b>Key G</b>	
	Adult shell small (generally under 1.5 cm height); males with verge .....	
	.....	8
4	Juvenile smooth .....	Subgenus <i>Oreobasis</i> : 5
	Juvenile with concentric ridges .....	Subgenus <i>Calibasis</i> : 7

5	Adult large, to 3.5 cm; strongly elongate conic; nacre white, shell with several yellow and brown bands .....	<i>Juga (Oreobasis) n. sp.</i> 2
	Adult small-large, to 3 cm length; nacre purple-brown; shell banded or bandless .....	6
6	Adult large, to 3 cm length; nacre light purplish-white; shell with 1 or 2 bands .....	<i>Juga (Oreobasis) orickensis</i> (Henderson, 1935)
	Adult smaller, to 2 cm length; nacre rich purple; shell banded or with inconspicuous shoulder band .....	<i>Juga (Oreobasis) n. sp.</i> 3
7	Adult cinnamon red-reddish black; spire tall, sides somewhat flattened .....	<i>Juga (Calibasis) acutifilosa</i> (Stearns, 1890)
	Adult greenish to brownish yellow; spire stout; whorls strongly convex .....	<i>Juga (Calibasis) occata</i> (Hinds, 1844)
8	Habit generally amphibious or terrestrial; head-foot subdivided on each side by a longitudinal groove .....	Family Pomatiopsidae (no ROD species)
	Habit generally aquatic; head-foot not subdivided by a longitudinal groove .....	Family Hydrobiidae 9
9	Males with single-ducted verge (penis) .....	10
	Males with two- ducted verge (penis and accessory lobe) .....	Subfamily Amnicolinae: 13: see also Key H
10	Nuclear whorl of shell relatively large (0.38-0.48 mm in diameter); operculum paucispiral, nucleus excentric; verge lobes relatively stout .....	Genus <i>Amnicola</i> (no ROD species)
	Nuclear whorl of shell relatively small (0.29-0.36 mm in diameter); operculum multisprial; nucleus subcentral; verge lobes relatively slender .....	Genus <i>Lyogyrus</i> : 11: see also more detailed Key H
11	Shell tall, 6 whorls; body light with mask of pigment around eyes and proximal end of snout .....	<i>Lyogyrus n. sp.</i> 2
	Shell depressed, 3-4 whorls; body light-dark, but no mask .....	12
12	Shell very small (height under 2 mm); yellow, transparent; body and visceral coil essentially pigmentless .....	<i>Lyogyrus n. sp.</i> 3
	Shell larger (to 2.5 mm height); clear-whitish, transparent; body light even gray; visceral coil black .....	<i>Lyogyrus n. sp.</i> 1
13	Verge with single duct; generally with accessory lobe and glandular patches .....	Subfamily Nymphophylinae:
	Genus <i>Pyrgulopsis</i> (1 ROD species; not readily keyable: see <i>Pyrgulopsis n. sp.</i> 20)	
	Verge simple, with single duct; no accessory lobe or glandular patches .....	Subfamily Lithoglyphinae: Genus <i>Fluminicola</i> (see Upper Sacramento, middle Klamath, and Upper Klamath keys [B-D])
14	Shell limpet-shaped .....	15
	Shell coiled .....	17
15	Apex on midline; no gills; generally over 1 cm length .....	Family Lancidae : see Key F
	Apex not on midline; generally less than 1 cm length .....	16

16	Animal and shell dextral (coiled to right) .....	
	..... Superfamily Acroloxoidea Family Acroloxidae (no ROD species)	
	Animal and shell sinistral (coiled to left) .....	
	..... Superfamily Ancyloidea ( <i>pars.</i> ) Family Aculidae (no ROD species)	
17	Animal and shell dextral (coiled to right) .....	
	..... Superfamily Lymnaeoidea ( <i>pars.</i> ) Family Lymnaeidae ( <i>pars.</i> ) (no ROD species) 23	
	Animal and shell sinistral (coiled to left) .....	
	..... Superfamily Ancyloidea ( <i>pars.</i> ) (no ROD species) 18	
18	Shell with raised (usually rather short) spire; blood nearly colorless; no pseudobranch (false gill); mantle digitate or lobed .....	Family Physidae (no ROD species)
	Shell with flat (sunken) spire; blood red; pseudobranch near pneumostome or anus; mantle margin simple .....	Family Planorbidae 19
19	Shell small, under 7 mm diameter, flat or depressed spire; much compressed .....	
	..... Genera <i>Menetus</i> , <i>Gyraulus</i> , and <i>Promenetus</i> (no ROD species)	
	Shell larger, often over 1 cm diameter .....	20
20	Shell with few, rapidly increasing whorls; body whorl disproportionately large; perforate to not umbilicate .....	Genus <i>Vorticifex</i> : see Key E
	Shell with more than a few (often many) whorls, not particularly rapidly increasing; body whorl not disproportionately large; umbilicus generally large .....	21
21	Left side of shell spire strongly inverted; with more or less deep conical depression; spire side of body whorl with or without strong keel .....	Genus <i>Helisoma</i> : 22
	Left side of shell spire not strongly inverted; with depression either shallow, absent, or raised above body whorl (exverted); spire side of body rounded or angular .....	
	..... Genus <i>Planorbella</i> (no ROD species)	
22	Spire side of body whorl without strong keel(s) .....	
	..... Subgenus <i>Helisoma</i> , s.s. (no ROD species)	
	Spire side of body whorl with one or more strong keels .....	
	..... Subgenus <i>Carinifex</i> : <i>Carinifex newberryi newberryi</i> (Lea, 1858)	
23	Adult shell with large, globose body whorl; no spiral striation .....	
	..... <i>Radix auricularia</i> (not a ROD taxon)	
	Adult shell with narrow to globose body whorl; if globose, sculptured with microscopic spiral striations .....	24
24	Shell succiniform (thin and fragile with a large, oval aperture and body whorl); small spire; surface with microscopic raised, spiral periostracal threads .....	
	..... <i>Pseudosuccinea columella</i> (not a ROD taxon)	
	Shell not succiniform, aperture may or may not be large and oval, but if so, shell not thin and fragile; and not sculptured with microscopic raised, spiral periostracal threads .....	25
25	Shell large, adult more than 35 mm in length .....	26
	Shell smaller, adult less than 35 mm in length .....	27

- 26     Shell with a relatively narrow body whorl ..... 27
- ..... Shell with a wider, expanded, elongately oval to globose body whorl, sharp spire ..... Genus *Lymnaea* (no ROD species)
- 27     Adult shell medium-large, generally more than 13 mm (occasionally roughly 13 mm) in length; surface sculptured with microscopic spiral striations; columella usually with a well-developed twist or plait ..... Genus *Stagnicola* (*pars.*) (no ROD species)
- ..... Adult shell relatively small, generally less than 13 mm [although occasionally up to 15-16 mm] in length; spiral sculpture usually absent, very weak when present; columella generally without a twist or plait ..... Genus *Fossaria* (no ROD species)

### E. Key to Extant Species of *Vorticifex*

Living species of *Vorticifex* (sometimes placed in the separate genus or subgenus *Parapholyx*) are mostly poorly studied, aside from some of those dealt with in Baker (1945). Their relationships to the numerous Late Cenozoic forms also need to be clarified. Anatomical discriminants in this group appear to be comparatively subtle. We have retained the current classification, mostly derived from Baker (1945), as the subspecific epithets are likely to be valid; however, certain of the subspecies are likely either to be recognized eventually as full species or to show closer relationships to taxa currently assigned to another species or undescribed.

This genus is a strongly atypical planorbid, being a stream-adapted, cold stenothermal mollusk most typical of cold oligotrophic flowing-water habitats of medium-large size. In some ways, its ecology is much closer to that of the aberrant limpet-shaped lymnaeid group Lancidae (with which they often occur) than to stereotypical Planorbidae.

1	Shell neritiform, thick; aperture thickened around whole periphery, so that aperture opening evidently constricted .....	<i>neritooides</i> (Hemphill in Baker, 1945)	2
	Shell thin; neritiform or with low spire; callus at columella and base only .....		2
2	Shell neritiform .....		3
	Shell with short spire or almost neritiform .....		4
3	Shell large, to 2.5 cm diameter; very thin, cinnamon-colored; no varices or periostracal fringes .....	<i>klamathensis klamathensis</i> (Baker, 1945)	
	Shell large, to 2.5 cm diameter; very thin, yellowish, with prominent regular periostracal fringes and underlying shallow varices .....	<i>effusus dalli</i> (Baker, 1945)	
4	Shell with definite spire .....		5
	Shell with very low spire or nearly neritiform .....		6
5	Shell solid but not thick; to 2 cm diameter; juvenile whorls rounded; no varices .....	<i>klamathensis sinitsini</i> (Baker, 1945)	
	Shell comparatively thin; less than 1 cm diameter; juvenile whorls strongly keeled; prominent varices, with or without small periostracal fringes .....	n. sp. 1	
6	Shell thin to somewhat solid; diameter to 3 cm; with several low diagonal ribs on final whorl .....	<i>effusus diagonalis</i> (Henderson, 1929)	
	Shell typically somewhat solid; diameter generally 1 cm or less; surface nearly smooth, with very fine growth lines; occasional scattered low periostracal fringes; no varices .....	<i>effusus effusus</i> (Lea, 1856)	

#### F. Key to Extant Species of Lancidae

The endemic western North American lymnaeid family is easily distinguished from other freshwater limpets by their larger size and circumferential muscle scar (unlike bundled muscles of Ferrissia, e.g.). Only well-known taxa are covered below. There are some indications of additional undescribed taxa and several fossil representatives whose relationships to these forms are uncertain as yet.

- |   |  |  |
|---|--|--|
| 1 | Muscle scar incomplete .....   | 2  |
|   | Muscle scar complete .....   | 3  |
| 2 | Apex anterior-subcentral; large (length > 1 cm); height much less than width or length .....                   | <i>Fisherola nuttalli</i> (Haldeman, 1843) |
|   | Apex posterior-subcentral; small (length < 7 mm); height equal or greater than width, subequal to length ..... | <i>Lanx</i> n. sp. (Banbury Springs lanx)  |
| 3 | Shell low, scale-like; thin; height much less than width .....   | <i>Lanx klamathensis</i> Hannibal, 1912    |
|   | Shell higher .....   | 4  |
| 4 | Shell comparatively low; commonly streaked and dotted with white as well as red pigment .....                  | <i>Lanx patelloides</i> (Lea, 1856)        |
|   | Shell comparatively high; red pigment only or rare white streaks .....   | 5  |
| 5 | Shell comparatively high; height more than 1/2 width .....   | <i>Lanx alta</i> (Tryon, 1865)             |
|   | Shell comparatively low, ca. 1/2 width .....   | <i>Lanx subrotundata</i> (Tryon, 1865)     |

## H. Key to some Western US Species of Amnicolinae

With the exception of *Lyogyrus greggi*, western US Amnicolinae (regarded as a separate family by Davis *et al.*, 1985; but see Ponder & Waren, 1988; Kabat & Hershler, 1993) were virtually unknown until the last seven years (see, e.g., Hershler & Thompson, 1988; Hershler & Holsinger, 1990; Frest & Johannes, 1998). They are still typically rare and scattered, especially as compared to the nymphophylinid *Pyrgulopsis* and the characteristic western lithoglyphinids *Fluminicola* and *Pristinicola*. Most are as yet undescribed. Taxonomy of this subfamily is changing rapidly (see, e.g., Thompson & Hershler, 1991; Hershler, in press), so that the recent literature should be examined carefully and a specialist should be consulted before definite assignment of problematic Hydrobiidae possibly belonging to this group. Hershler (in press) describes a new genus for *L. greggi* and *Lyogyrus* n. sp. 10, to which many of the western US species probably should be assigned. We maintain these taxa in *Lyogyrus* until Hershler's name is validated. See also basic key and taxon entries in **SPECIES DISCUSSIONS**.

- |   |   |                          |
|---|---|--------------------------|
| 1 | Nuclear whorl of shell relatively large (0.38-0.48 mm in diameter); operculum paucispiral, nucleus clearly excentric; penial lobe and filament relatively stout; lobe originates about half way up filament ..... |                          |
|   | ..... Genus <i>Amnicola</i> (no ROD species: only western species <i>Amnicola</i> n. sp. 1)   |                          |
|   | Nuclear whorl of shell relatively small (0.29-0.36 mm in diameter); operculum paucispiral; nucleus subcentral; penial lobe and filament relatively slender; lobe originates near base of filament .....           | Genus "Lyogyrus". 2      |
| 2 | Shell very tall conic, 6-8 whorls; operculum almost multispiral .....   | 3                        |
|   | Shell depressed-moderately tall conic, 3-6 whorls; operculum definitely paucispiral ....  | 4                        |
| 3 | Body light with mask of pigment around eyes, proximal end of snout, body sides; to 8 whorls, 4 mm height, unpigmented penial lobes .....  | <i>Lyogyrus</i> n. sp. 2 |
|   | Body light, no mask, to 6 whorls, 2.5 mm height, narrowly conic; penial filament pigmented .....  | <i>Lyogyrus</i> n. sp. 6 |
| 4 | Shell off-white, light tan, or orange .....   | 5                        |
|   | Shell yellow .....  | 10                       |
| 5 | Shell orange; to 1.5 mm height; 3 whorls, low-medium conic, black visceral coil, gray head, tentacles, and verge lobes .....  | <i>Lyogyrus</i> n. sp. 7 |
|   | Shell off-white or light tan .....  | 6                        |
| 6 | Spire strongly depressed to nearly flat; visceral coil black; head and tentacles light gray (a few melanin granules) verge lobes unpigmented; to 1.5 mm height; 3 1/2-4 whorls .....                              |                          |
|   | ..... <i>Lyogyrus</i> n. sp. 9  |                          |
|   | Spire with taller spire; dome-shaped or low to medium conic .....   | 7                        |

- 7 Spire low conical, to 1.5 mm height; 3 1/2 whorls; visceral coil black; light gray head and tentacles; unpigmented verge lobes ..... *Lyogyrus* n. sp. 1  
 Spire medium conical or dome-shaped ..... 8
- 8 Spire with early whorls dome-shaped; ca. 3.5 whorls; dark visceral coil and tentacles; body medium gray ..... *Lyogyrus* n. sp. 10  
 Spire medium or moderately tall conical ..... 9
- 9 Spire moderately tall conical, to 2.5 mm height, 4-5 whorls; black visceral coil; dark gray head, tentacles, and verge lobes ..... *Lyogyrus greggi* (Pilsbry, 1935)  
 Spire medium conical, to 1.5 mm height, 4 whorls; black visceral coil; medium gray head and tentacles, verge lobes ..... *Lyogyrus* n. sp. 5
- 10 Shell nodose, small (height 1.2 mm), medium conical, 3 whorls; transparent; body and visceral coil essentially pigmentless ..... *Lyogyrus* n. sp. 4  
 Shell almost smooth ..... 11
- 11 Shell about 1.2 mm in height, low conical, 3 whorls, transparent; light yellow; body and visceral coil almost pigmentless; verge lobes unpigmented ..... *Lyogyrus* n. sp. 3  
 Shell very small, about 1 mm height, depressed conical, 3 whorls, transparent; canary yellow; body and visceral coil almost pigmentless; verge lobes unpigmented .....  
 ..... *Lyogyrus* n. sp. 8

## I. Key to Some Western US Valvatidae

The distinctive Holarctic family Valvatidae is comparatively well-known in the eastern US but poorly studied in the west. Considerable revision of Russian endemic taxa has taken place; but thus far anatomic features are only partly known; and the relevance of the Russian taxonomy to the US is uncertain. We include here only those eastern taxa known to occur in the western US, as well as a few western endemics. Further study is likely to reveal additional taxa. For eastern US forms, see Burch (1989) and Burch & Jung (1987).

- 1 Adult shell with one to three spiral carinae ..... 2  
Adult shell acarinate ..... 3
- 2 Shell with three carinae; greenish-yellow ..... *Valvata tricarinata* (Say, 1817)  
Shell with two carinae (central carina obsolete); shell brownish-green .....  
..... *Valvata utahensis* Call, 1884
- 3 Shell almost discoidal; small (<2 mm diameter); glossy ..... *Valvata* n. sp. 1  
Shell with distinctly elevated spire ..... 4
- 4 Shell depressed-turbinate (spire little elevated) ..... 5  
Shell subconical to high turbinated (spire obviously elevated) ..... 8
- 5 Shell to 5-7 mm diameter ..... 6  
Shell < 5 mm diameter; apical whorls often orange; shell transparent, glossy, clear-slightly yellow ..... *Valvata humeralis* Say, 1829
- 6 Shell generally about 5 mm in diameter; transparent; clear-whitish; luster dull; axial striae laminate ..... *Valvata lewisi lewisi* Currier, 1868  
Shell generally about 5-7 mm in diameter ..... 7
- 7 Shell transparent; blue-green; luster dull; axial striae laminate .....  
..... *Valvata lewisi helicoidea* Dall, 1905  
Shell transparent; very pale green; luster glossy; axial striae low; mature aperture expanded ..... *Valvata mergella* Westerlund, 1883
- 8 Shell subconical; often brilliant (emerald) green; apex acute .....  
..... *Valvata virens* Tryon, 1863  
Shell subconical; generally clear-whitish; axial striae fine .....  
..... *Valvata sincera sincera* Say, 1824

## APPENDIX B. SITES.

Map coordinates are from the latest available USGS 7.5' series topographic maps. Legal coordinates are given when practical; where survey is irregular, projected coordinates are given, orienting from the northwest section corner wherever possible. Some areas have not been surveyed, or the survey is sufficiently irregular as to make use of township and range difficult. Hence, UTM coordinates are also supplied, in the format favored by Crawford (1983). Road names, road numbers and land ownership were confirmed using DeLorme Mapping's Oregon Atlas and Gazetteer, plus National Forest (Nez Perce) and BLM road atlases and maps. Site descriptions are a partial dump from Deixis MolluskDB™.

Site entry format: Deixis locality number, Project site number [in brackets: often not present], locality name, coordinates (UTM; legal in that order, if available), quadrangle (name and year), county, drainage, mountain range, valley, geographic description, elevation, depth, habitat description, locality remarks, collector remarks, date collected, and collectors. Final brackets (when present) refer to maps in Frest & Johannes (1995a, b)

Collector abbreviations as follows:	TF-	Terrence J. Frest
	MF-	Margaret Frest
	EJ-	Edward J. Johannes
	JJ, JEJ-	James E. Johannes
	PHP-	Peter H. Pressley
	GH-	George Holm
	SW-	Steve Welty
	SN-	Steve Nelson

201. Idaho. Snake R.-Columbia R. Where two channels combine, at base of talus. Depth 0-6½. Mud bottom channel with few scattered rocks. Mostly over shadowed by vegetation (nettles, roses, thistles). No aquatic vegetation. relatively warm water. Mostly shallow. Most flow derived from irrigation return. Snail patchy; generally rare, locally common. Land taxa noted by not collected. Collected by hand & dip net. 06/25/1991 TF, EJ!

202. Idaho. Snake R.-Columbia R. Top of talus and cliff base on south side of alcove, below irrigation recharge. Permanently wet basalt cliff face, shallow sand & silty pools at top of talus. Rock of talus and cliff face bare - densely coated with unidentified bryophytes & algae. Common gelatinous blue-green algae; *Cladophora* also common. Water depth less than 1 cm & warm. Snails uncommon, patchy distribution. Rare land taxa noted in vicinity. Considerable fine sedimentation accumulation derived from top. Dead shells in sediment probably partly derived from uplands also. Collected by hand. 06/25/1991 TF, EJ!

203. Idaho. Snake R.-Columbia R. South most spring on TNC Thousand Springs Reserved in an alcove SE at Sand Springs bottom channel. Permanently wet cliff face (basalt). Shallow sand & silty pools at top of talus. Talus & cliff face bare - densely coated with bryophytes & algae. Gelatinous blue-green algae common. Water depth less than 1 cm & warm. Irrigation return has

polluted the spring. Aquatic snails uncommon live; mostly dead snails washed over canyon rim. Uncommon land snails not collected in vicinity. Considerable fine sediment accumulation. Many dead aquatic shells, fewer species live; some dead from uplands? Collected by hand. 06/25/1991 TF, EJ!

204. Idaho. Snake R.-Columbia R. Channel on north side of alcove in talus, partly covered. Mud bottom channel among big boulders. Watercress & nettles. Partly shaded area in talus. Relatively warm shallow water. Light ranging from open to completely dark. Hand collected. 06/25/1991 TF, EJ!

206. Idaho. Snake R.-Columbia R. Upper end, near irrigation inflow of Lower Sand Springs pool on east side where springs flow out of a talus. Area on east side heavily influenced by spring inflow. Cobble/mud bottom, minor red algae on rocks. Cobbles average about 20 cm in diameter. Moderate current flow. Turbidity low. 25 BRS in 90 cm sq. area - 11 BRS in 102 cm sq. area on surfaces of rocks. Area closes to irrigation recharge return had fewer BRS on rocks. BRS typically found under rocks, seem to be light sensitive. Hand collected. 06/25/1991 TF, EJ!

207. Idaho. Snake R.-Columbia R. Sand Springs bottom channel, S. side of Native American fish weir to TNC gauge on east side of channel. Spring influenced channel. *Lemna trisulca*, red algae sparse to moderate near shore, *Veronica* patches. Mud/cobble bottom. Cobbles average about 30 cm diameter. BRS common on east side of channel, becoming rare or absent 14 to 23 ft out from east shore. 11x17 cm rock had 96 BRS, average is 24 BRS on 25 cm sq. area. BRS found mostly undersides of rocks; can be on lower sides. BRS not common under *Veronica* patches. BRS uncommon to absent near weir. Collected by hand & dip net. 06/25/1991 TF, EJ!

208. Idaho. Snake R.-Columbia R. In Lower Sand Springs pool from just north of the weir to *Scirpus* marsh on the east side. Spring influenced pool. Scattered *Elodea*, abundant red algae, duck weed, sparse patches of *Veronica* & *Myriophyllum*. Cobbles average 80 cm in diameter. Boulders present as well. BRS common from east shore out to about 26 ft., decline from 26 ft. out to 46 ft. out from east shore. Not found in *Scirpus* marsh on east side & none in north end of transect. BRS 60/25 mm sq. to 12/18 mm sq., 1 P.A. to every 500 BRS. *Fluminicola "hindsi"* common, 5 to 1 BRS. BRS abundant at talus base. Collected by hand & dip net. 06/25/1991 TF, EJ!

209. Idaho. Snake R.-Columbia R. North end of Lower Sand Spring pool just south of *Veronica* & *Scirpus* patches. Spring influenced pool. Rock & silt bottom. Common *Fluminicola "hindsi"*, very common *Potamopyrgus antipodarum* on *Veronica*, uncommon *Physella gyrina*., rare *Vorticifex effusa effusa* & *Pisidium*. No BRS found here recent dead or alive. Uncommon long-dead. 06/25/1991 TF, EJ!

210. Idaho. Snake R.-Columbia R. S. end of Lower Sand Springs Pool on W. side near irrigation inflow. W. side of emergent cobble island & E. of *Scirpus* marsh. Spring feed pool. Side channel with rock & mud bottom. *Scirpus* fringes west side of channel, watercress occurs at upper end of channel near irrigation inflow. Evidence of heavy siltation from irrigation inflow covering rocky substrate was seen here, *Scirpus* & *Typha* marsh could expand into this channel eventually. Only one dead BRS specimen found here. Live quite rare & scattered. Live likely transports. 06/25/1991 TF, EJ!

211. Idaho. Snake R.-Columbia R. Lower Sand Springs pool on west side alongside a *Typha* & *Scirpus* marsh. Spring feed pool. Mud bottom & rocks. BRS rare. *Fluminicola "hindsi"*, *Potamopyrgus antipodarum*, *Physella gyrina*, & *Pisidium* rare. Most rocks with no live BRS; few seen in grabs could be strays from east. 06/30/1991 TF, EJ!

212. Idaho. Snake R.-Columbia R. Lower Sand Springs pool in *Veronica* patch just S. of weir. Spring feed pool. Mud, silt & rock bottom. Red algae covered rocks. *Veronica* patch. BRS not found under *Veronica* patch. BRS rare on rocks, at the edge of *Veronica* patch. *Potamopyrgus antipodarum* & *Fluminicola "hindsii"* on *Veronica*. BRS common in rocks on weir. Rare to north. Collected by hand & dip net. 06/30/1991 TF, EJ!

213. Idaho. Snake R.-Columbia R. Lower Sand Springs pool just north of weir in *Veronica* patch. Spring feed pool. Gravel, silt & rock bottom. Moderately fast flow. BRS not found on *Veronica* patch. *Potamopyrgus antipodarum* uncommon, BRS, *Physella gyrina*, *Vorticifex effusa effusa* rare. *Fluminicola "hindsii"* common - abundant BRS to N., E., & W. of *Veronica* patch. A few to S. of patch. Common on rocks near weir to N.; abundant near shore. Collected by hand & dip net. 06/30/1991 TF, EJ!

214. Idaho. Snake R.-Columbia R. Lower Sand Springs pool on west side alongside *Scirpus* marsh. Spring feed pool. Mud/silt bottom. Rather slow flow. *Scirpus* marsh with some filamentous algae in channel. No BRS found. *Potamopyrgus antipodarum* abundant, *Fluminicola "hindsii"* somewhat common, *Vorticifex effusa effusa* rare (juveniles only). 06/25/1991 TF, EJ!

215. Idaho. Snake R.-Columbia R. Lower Sand Springs bottom channel, E. side of TNC access road bridge into *Scirpus* marsh. About 20 m from mouth of inlet. Spring feed pool. Mud bottom. *Scirpus* marsh. H2S present. Poor snail habitat. Little vegetation except dead *Scirpus* roots. Slow velocity. Shallow where collected. Deeper to W. in channel especially at bridge. Channel dredged sometime in the past at bridge. Mostly dead shells. Long dead BRS. *Potamopyrgus antipodarum* abundant, full ontogeny. Few BRS live in 1 sweep; could not replicate. Strays? Collected by dip net. 07/03/1991 TF, EJ!

216. Idaho. Snake R.-Columbia R. Lower Sand Springs bottom channel, 40 m from bridge on W. side of channel. Spring feed channel with largely silt bottom. Filamentous green algae abundant. *Potamogeton crispus* and *Zannichellia palustris* present. *Pisidium* spp. common, *Potamopyrgus antipodarum* abundant, rare *Fluminicola "hindsii"*. *Potamopyrgus antipodarum* on *Zannichellia* & *Potamogeton*. Few dead BRS noted in some sweeps. Most long dead. Dip net & hand collected. 07/03/1991 TF, EJ!

217. Idaho. Snake R.-Columbia R. Lower Sand Springs channel, 60-80 m from mouth on W. side. Spring feed channel silt & gravel bottom. Occasional gravel patches. Some moderately deep pools. Most everything collected was recent or long dead. *Potamopyrgus antipodarum* were collected live only. Winnows of live *Potamopyrgus antipodarum* occurred in disturbed areas. *Potamopyrgus antipodarum* abundant locally. BRS rare long dead. *Potamopyrgus antipodarum* abundant on *Zannichellia* patches, not on E. side marshes with *Scirpus*. Good sphaeriid habitat. Collected by dip net. 07/03/1991 TF, EJ!

218. Idaho. Snake R.-Columbia R. Lower Sand Springs channel between 140 & 160 m from mouth of inlet & just S. of the mouth Sand Springs creek overflow. Spring feed channel with gravel & silt bottom. *Scirpus* on east side of channel. Moderate velocity in channel. Scattered *Veronica* beds & sparse *Zannichellia*. Occasional deep pools. Abundant *Potamopyrgus antipodarum*. BRS found here, but very rare (strays?). Could not replicate live or dead in 1 sweep. *Potamopyrgus antipodarum* in *Zannichellia*. Some filamentous algae. Most sweeps in 5-15 cm depths here. Good *Pisidium* site. Few hinkleyi in 1 area but nowhere else - strays or declining population? Too few to survive. Should recheck. Collected by dip net. 07/03/1991 TF, EJ!

219. Idaho. Snake R.-Columbia R. Lower Sand Springs channel between 200 & 220 m from mouth of inlet on E. side. Spring feed channel with mixed vegetation on gravel bottom. *Veronica* & minor *Potamogeton*. Common filamentous algae. Moderate depths & flow in channel. Live abundant *Potamopyrgus antipodarum*, common *Fluminicola "hindsii"*, rare *Vorticifex effusa*

*effusa*, no BRS live or dead found. Scattered long-dead BRS between here & near tributary channel mouth. Samples in 10-80 cm depths; mostly in deepest part of channel. BRS dead further upstream also. Collected by dip net. 07/03/1991 TF, EJ!

220. Idaho. Snake R.-Columbia R. Lower Sand Springs channel between 240 & 260 m from mouth of inlet on W. side. Spring feed channel with gravel & boulder bottom channel. *Veronica* patch. Some boulders have red algae. Channel comparatively deep, moderate flow rate in center. *Potamopyrgus antipodarum* abundant (especially on *Veronica*), rare *Vorticifex effusa effusa*, uncommon *Fluminicola "hindsii"* & *Physella* sp., BRS uncommon on rocks not directly under *Veronica* patch (2/25 mm sq. area). Hand & dip net collected. 07/03/1991 TF, EJ!

221. Idaho. Snake R.-Columbia R. Talus & channel of upper end of Sand Springs Creek overflow where spring flow from talus. Spring & channel. Mud bottom. Talus on E. side of channel, occasional rock (cobble) in channel with rare BRS. Very little macro vegetation in channel. Moderate flow velocity. Channel dredged some time ago. BRS uncommon on rocks (3 BRS in 25 mm sq. area to 5 BRS in 80 mm<sup>2</sup> area) near spring source. Very few specimens of BRS found in channel on rocks. Hand collected. 07/05/1991 TF, EJ!

222. Idaho. Snake R.-Columbia R. Mouth of spring channel (on E. side) going into Sand Springs Creek overflow below (S. of) source of creek. Spring channel with rock bottomed channel. Rocks partially silt covered. Blue-green algae on rocks. Rather low velocity. Spring source very shallow. *Potamopyrgus antipodarum* and *Fluminicola "hindsii"* more abundant than last site (21). 30 *Potamopyrgus antipodarum* for every BRS found, 15 *Fluminicola "hindsii"* for every BRS found. 3 BRS in 25 mm sq. area. Collection from moderate depth. 07/05/1991 TF, EJ!

223. Idaho. Snake R.-Columbia R. Channel of Sand Springs Overflow below talus approx. 32 m from the source. Spring channel with mud bottom with isolated "islands" of cobbles on the bottom. Flow velocity slow. Highly modified from dredging. *Potamopyrgus antipodarum*, *Fluminicola "hindsii"* abundant, 3 BRS in 25 cm sq. area to 6 BRS in 56 cm sq. area. BRS found only on cobbles, not in mud substrate, most 25 mm sq. with none. Collection from vicinity at largest (& deepest) cobble pile. Collected by hand & dip net. 07/05/1991 TF, EJ!

229. Idaho. Snake R.-Columbia R. East side of Sculpin Springs pool from *Scirpus* marsh on S. end to just N. of TNC gauge. Deep spring pool. Boulders/cobbles coated with red algae. Boulders about 1.2 m average size. *Ceratophyllum* dominant bottom vegetation. BRS common, *Potamopyrgus antipodarum* uncommon, *Fluminicola "hindsii"* very abundant. BRS common on east side of pool becoming rare on the west side. BRS found rare on sunken duck weed, but not observed feeding on it. Collected by hand & dip net. 07/05/1991 TF, EJ!

230. Idaho. Snake R.-Columbia R. S. end and middle of Sculpin Springs pool about 49 ft from E. shore in from of *Scirpus* marsh. Spring pool. Cobble, gravel, silt bottom. Common *Ceratophyllum* & floating *Veronica* patches. Below *Veronica* patch abundant green *Elodea*. Red *Elodea* not common. BRS common, becoming sparse near west shore. *Fluminicola "hindsii"* very abundant, *Potamopyrgus antipodarum* common, *Vorticifex effusa effusa* uncommon. Also *Physella gyrina* common. *Gyraulus parvus* & *Pisidium casertanum* rare. Collected by hand & dip net. 07/05/1991 TF, EJ!

231. Idaho. Snake R.-Columbia R. East side of Sculpin Springs pool about 20 ft N. of TNC gauge. Spring pool. Cobble, boulder, gravel bottom. BRS abundant (good habitat). *Fluminicola "hindsii"* very abundant. *Potamopyrgus antipodarum* rare. Collected by hand & dip net. 07/05/1991 TF, EJ!

232. Idaho. Snake R.-Columbia R. N. end on E. side of Sculpin Springs pool. Spring pool. Cobble, silt bottom. BRS rare, none found at *Scirpus* marsh. N. end of transect *Pisidium* spp. common. *Vorticifex effusa effusa* common. Collected by hand & dip net. 07/05/1991 TF, EJ!

233. Idaho. Snake R.-Columbia R. West side of Sculpin Springs pool. Spring pool. Gravel, silt bottom. Collected by hand & dip net. 06/26/1991 TF, EJ!

234. Idaho. Snake R.-Columbia R. Middle of Sculpin Springs pool about 47 ft from east shore. Spring pool. *Veronica* patch on E. side. Moderate current. BRS abundant but around *Veronica* patches, not on or under them. *Potamopyrgus antipodarum* rare. Collected by hand & dip net. 06/26/1991 TF, EJ!

235. Idaho. Snake R.-Columbia R. From E. shore to middle of Sculpin Springs pool. Spring pool. Cobble, gravel, some largely with red algae. Current moderately strong. Cold water. Some *Zannichellia*, *Ceratophyllum*, *Myriophyllum*. BRS not common. Collected by hand & dip net. 06/26/1991 TF, EJ!

300. Unnamed spring at BLM Clyde Creek Recreation site. Zone 12: 283,720E 4,681,690N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 26, T13S R24E, Connor Ridge quad., Cassia Co., Idaho. Clyde Cr.-Cassia Cr.-Raft R.-Snake R.-Columbia R., Albion Range. Unnamed spring at BLM Clyde Creek Recreation site on south side of Oakley-Elba Road (FS548) and Clyde Creek, NW of Elba. Elev. 5620'. Depth 2-4 $\frac{1}{4}$ . Cold spring. Not on USGS map. *Sphaerium*, *Fossaria*, and *Pisidium*. Collected by dip net. 9/25/1992 TF, EJ!

369. Saint Charles Creek at Saint Charles Campground. Zone 12: 463,150E 46,623,280N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 17, R15S T43E, St. Charles quad., Bear Lake Co., Idaho. St. Charles Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. NW side of St. Charles Creek at St. Charles Campground, St. Charles Canyon, SW of FS412, Cache National Forest, administered by Caribou National Forest. Elev. 6360'. Depth 2-8". Large creek with cobble bottom. No macrophytes. No mollusks found. 9/6/1992 TF, EJ!

424. Sliger's Pool, south side of Snake River. Zone 11: 701,950E 4,722,780N. Projected NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 23, T9S R16E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Pool below Auger Falls, above the mouth of Rock Creek, S. side of Snake River at RM 606.5. Elev. 2995'. Depth 7". River with basalt bedrock substrate overlain by deep mud and fine gravel. Deep pool with *Ceratophyllum*, *Lemna minor*, rare *Elodea*, abundant *Potamogeton pectinatus*, *Cladophora*, and other filamentous algae. Hand and dip net collections. 9/1/1992 TF, EJ!

425. Mouth of Rock Creek. Zone 11: 701,870E 4,722,700N. Projected SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 23, T9S R16E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Mouth of Rock Creek to about 20' upstream on the E. side, S. side of Snake River at about RM 606.4. Elev. 2995'. Depth 2-24". Fast flowing, cold creek with *Potamogeton pectinatus*, *Potamogeton crispus*, brown algae on rocks and larger plants, and *Rorippa*. *Ceratophyllum* and *Cladophora* occur abundantly in the river near the mouth. Mostly boulder and cobble substrate with some gravel, sand, and mud patches; basalt bedrock. Rare live *Fluminicola "hindsii"*, common *Potamopyrgus antipodarum*. Hand, tray and brush, and dip net collections. 9/1/1992 TF, EJ!

426. South side of Snake River at RM 606.9. Zone 11: 702,610E 4,722,750N. Projected NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 24, T9S R16E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. S. side of Snake River below Auger Falls at RM 606.9. Elev. 3000'. Depth 24-48". River with narrow, potholed, bedrock-lined shelf bordering incised thalweg channel. Shelf with potholes and boulders and gravel-sand patches with *Potamogeton crispus*, *Potamogeton filiformis*, abundant *Cladophora*, occasional *Ceratophyllum*, and flat green algae. Basalt bedrock. Grab from aquatic

plants and gravel-sand patches. Boulders lifted and examined. Hand, brush and tray, and dip net collections. 9/1/1992 TF, EJ!

427. South bank of Snake at RM 606.9. Zone 11: 702,610E 4,722,720N. Projected SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 24, T9S R16E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. S. bank of Snake River at about RM 606.9, below Auger Falls at high-water mark. Elev. 3030'. Sand and silt drift deposits from 1984-85 Snake R. high water on basalt bedrock surface. Drift sample, sieved on site. Snails, *Gonidea angulata* abundant; *Anodonta californiensis* uncommon. 9/1/1992 TF, EJ!

428. Snake River at lower Auger Falls. Zone 11: 702,810E 4,722,670N. Projected NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 24, T9S R16E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. S. side of Snake River at RM 607.1, lower Auger Falls. Elev. 3015'. Depth 1-5'. River with potholed basalt bedrock flanking thalweg. Potholes with boulders and gravel-sand patches with *Potamogeton crispus*, *Potamogeton filiformis*, *Cladophora*, and occasional *Ceratophyllum* and flat green algae. Rapids. Small springs with secondary calcite deposits occur along the shoreline. Hand, brush and tray, and dip net collections. 9/1/1992 TF, EJ!

429. Snake River at upper Auger Falls. Zone 11: 703,260E 4,722,680N. Projected SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 24, T9S R16E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. S. side of Snake River at about RM 607.3, upper Auger Falls. Elev. 3050'. Depth 1-6'. River with rapids. Potholed basalt bedrock at thalweg border. Shelf with potholes with boulders and gravel-sand patches with abundant *Potamogeton crispus*, *Potamogeton filiformis*, and *Cladophora*; occasional *Ceratophyllum* and flat green algae; rare *Hydrodictyon*. Hand, tray and brush, and dip net collections. 9/1/1992 TF, EJ!

430. South side of Snake River at RM 607.6. Zone 11: 703,670E 4,722,420N. Projected NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 19, T9S R17E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. S. side of Snake River at about RM 607.6, above Auger Falls at abandoned bridge. Elev. 3060'. Depth 1-7'. River rapids in a basalt bedrock channel. Potholes with boulders and gravel-sand patches with dense beds of *Potamogeton crispus* and *Potamogeton filiformis*. Abundant *Cladophora*, *Ceratophyllum*, and flat green algae. Hand, brush and tray, trawl, and dip net collections. 9/1/1992 TF, EJ!

431. Mouth of Rock Creek canyon. Zone 11: 702,300E 4,721,740N. Projected NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 24, T9S R16E, Filer quad., Twin Falls Co., Idaho. Rock Cr.-Snake R.-Columbia R. Rock Creek at the mouth of Rock Creek canyon, on the E. side at RM 0.85. Elev. 3145'. Depth 3-19". Gravel and cobble bottom with some emergent boulders. Abundant *Potamogeton pectinatus*; *Rorippa* in clumps around rocks; abundant *Cladophora* on rocks. Hand, brush and tray, and dip net collections. 9/2/1992 TF, EJ!

432. Southwest end of unnamed lake. Zone 11: 703,180E 4,722,050N. Projected NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 24, T9S R16E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. SW end of unnamed lake in abandoned channel, S. of the Snake River. Elev. 3100'. Depth 3'. Lake cold at bottom, partly from groundwater flow, but nutrient-rich. Thick mud bottom, anoxic just below surface near shore and at surface toward lake center. Abundant *Ceratophyllum*, *Lemna minor*, very abundant and diverse filamentous algae, and *Tolypella* beds at margin. Dip net collected. 9/2/1992 TF, EJ!

433. Snake River at RM 607.8. Zone 11: 703,940E 4,722,180N. Projected SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 19, T9S R17E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. S. side of Snake River at rapids above Auger Falls, RM 607.8. Elev. 3070'. Depth 1-5'. River rapids in potholed

basalt bedrock. Abundant *Potamogeton pectinatus*, very abundant *Ceratophyllum densum*, uncommon *Potamogeton crispus*, rare *Elodea*, very abundant *Cladophora* and other filamentous algae. Anoxic just below sediment surface. Recent *Anodonta californiensis* fragments seen in material collected from the Snake R. Dead *Anodonta californiensis* rare and *Gonidea angulata* common in drift at high water mark. Hand, brush and tray, dip net collections. 9/2/1992 TF, EJ!

434. West side of Snake River at RM 608.1. Zone 11: 704,240E 4,722,060N. Projected NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 19, T9S R17E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. W. side of Snake River, 0.1 mi. S. and opposite the mouth of Warm Creek at RM 608.1. Elev. 3080'. Depth 1-5'. Deep pool behind rapids; mud bottom, very abundant *Cladophora densum* with luxuriant *Cladophora* cover; other filamentous algal genera abundant. Anoxic just below sediment surface. Basalt bedrock. Recent *Gonidea angulata*, complete long dead, and fragmentary shells of recent, *Anodonta californiensis*. Collected by hand and dip net. 9/2/1992 TF, EJ!

435. West side of Snake River at RM 608.25. Zone 11: 704,158E 4,721,795N. Projected SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 19, T9S R17E, Filer quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Side channel (lower part of a rapids) on the W. side of Snake River, 0.25 mi. S. of Warm Creek at RM 608.25. Elev. 3080'. Depth 12-48". Spring influenced river side channel with common *Rorippa* and bryophytes near indefinite shoreline. Extensively potholed basalt bedrock surface with boulders and gravel-sand patches occupied by abundant *Hydrodictyon*, *Potamogeton crispus*, and *Potamogeton filiformis*, abundant *Cladophora*, occasional *Ceratophyllum* and flat green algae. Travertine near shore. "Spring" impacted(? groundwater pollution). Hand, brush and tray, and dip net collections. 9/2/1992 TF, EJ!

436. West side of Snake River at RM 608.3. Zone 11: 704,130E 4,721,720N. Projected SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 19, T9S R17E, Filer quad., Twin Falls Co., Idaho. Snake R.-Columbia R. W. side of Snake River, 0.3 mi. S. of Warm Creek at RM 608.3. Elev. 3085'. Depth 1-4". River rapids in a potholed basalt bedrock surface with large knobs. Mud-gravel in potholes with common *Rorippa* patches near shore; offshore, abundant *Cladophora*, very abundant *Pithopora*, common *Hydrodictyon* and *Ceratophyllum*, rare *Elodea*. May be "spring" influenced (polluted groundwater recharge?). Dip net, brush and tray, and hand collections. 9/2/1992 TF, EJ!

437. South side of Snake River at RM 608.4. Zone 11: 704,200E 4,721,480N. Projected NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 30, T9S R17E, Filer quad., Twin Falls Co., Idaho. Snake R.-Columbia R. S. side of Snake River at RM 608.4. Elev. 3095'. Beach river drift covering a basalt bedrock. Drift sample excavated and then sieved in the field. 9/2/1992 TF, EJ!

438. South side of Snake River at RM 608.48. Zone 11: 704,260E 4,721,475N. Projected NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 30, T9S R17E, Filer quad., Twin Falls Co., Idaho. Snake R.-Columbia R. S. side of Snake River at RM 608.48. Elev. 3095'. Depth 1-54". Basalt bedrock river channel with mud-gravel in potholes occupied by abundant *Cladophora*, very abundant *Pithopora*, common *Hydrodictyon*, rare *Elodea*, and common *Ceratophyllum*. Hand, brush and tray, and dip net collections. Sampled to thalweg edge. 9/2/1992 TF, EJ!

439. South side of Snake River at RM 608.68. Zone 11: 704,520E 4,721,270N. Projected SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 30, T9S R17E, Filer quad., Twin Falls Co., Idaho. Snake R.-Columbia R. S. side of Snake River at RM 608.68. Elev. 3010'. Beach river drift covering a potholed basalt bedrock. Beach drift. Excavated drift sample, sieved in the field. 9/2/1992 TF, EJ!

440. South side of Snake River at RM 608.68. Zone 11: 704,540E 4,721,300N. Projected NE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 30, T9S R17E, Filer quad., Twin Falls Co., Idaho. Snake R.-

Columbia R. S. side of Snake River at RM 608.68. Elev. 3010'. Depth 1-48". Basalt bedrock river channel with mud-gravel in potholes occupied by abundant *Cladophora* and *Ceratophyllum*, common *Hydrodictyon*, rare *Elodea*. Hand, brush and tray, and dip net collections. 9/2/1992 TF, EJ!

441. South side of Snake River at RM 608.81. Zone 11: 704,718E 4,721,170N. Projected SW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 30, T9S R17E, Filer quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Beach on the S. side of Snake River at RM 608.81. Elev. 3010'. Potholed basalt bedrock river beach at high-water mark. Hand collected drift sample, sieved in the field. 9/2/1992 TF, EJ!

442. South side of Snake River at RM 608.82. Zone 11: 704,750E 4,721,175N. Projected SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 30, T9S R17E, Filer quad., Twin Falls Co., Idaho. Snake R.-Columbia R. S. side of Snake River at RM 608.82. Elev. 3010'. Depth 1-72". River with mud-boulders in potholes occupied by abundant *Cladophora* and *Ceratophyllum*, common *Hydrodictyon* and *Elodea*. Potholed basalt bedrock. Hand, brush and tray, and dip net collections. 9/2/1992 TF, EJ!

443. Unnamed springs. Zone 11: 700,700E 4,722,840N. Projected NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 23, T9S R16E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. E. branch of a spring run on the S. side of the Snake River. Elev. 3060'. Depth 2". Spring run with abundant *Rorippa*. Spring impacted by groundwater pollution? Basalt substrate. Dip net and hand collections. 9/3/1992 TF, EJ!

444. Unnamed springs. Zone 11: 700,640E 4,722,860N. Projected SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 23, T9S R16E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. W. branch of a spring run on the S. side of the Snake River. Elev. 3060'. Depth 2". Spring run with *Rorippa* cover; appears impacted. Basalt substrate. Dip net and hand collections. 9/3/1992 TF, EJ!

445. Unnamed springs. Zone 11: 700,690E 4,722,900N. Projected NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 23, T9S R16E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Spring run on the S. side of the Snake River. Elev. 3050'. Depth 2". Spring run with *Rorippa* patches. Springs appear impacted. Basalt substrate. Hand and dip net collections. 9/3/1992 TF, EJ!

446. South side of Snake River at RM 605.62. Zone 11: 700,680E 4,723,100N. Projected SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 23, T9S R16E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. S. side of Snake River at RM 605.62. Elev. 2990'. Depth 1-50". River with mud bottomed channel, slow water flow. Dense *Ceratophyllum* beds with abundant epiphytic algae; lesser amounts of *Elodea*, *Potamogeton crispus*. Basalt substrate. Dip net collections. 9/3/1992 TF, EJ!

447. South side of Snake River at RM 606.1. Zone 11: 701,380E 4,723,040N. Projected NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 23, T9S R16E, Jerome quad., Twin Falls Co., Idaho. Snake R.-Columbia R. S. side of the Snake River at RM 605.1. Elev. 2990'. Depth 1-48". River with mud bottom, slow water flow. Dense *Ceratophyllum* and epiphytic algae. Basalt substrate. Dip net collections. 9/3/1992 TF, EJ!

448. North side of Snake River at RM 607.7. Zone 11: 703,760E 4,722,460N. Projected NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 19, T9S R17E, Jerome quad., Jerome Co., Idaho. Snake R.-Columbia R. N. side of the Snake River at RM 607.7, near abandoned bridge. Elev. 3060'. Depth 10-72". River with potholed basalt bedrock channel with bedrock knobs. Mud-gravel in potholes; abundant *Potamogeton crispus* and *Cladophora* and other filamentous algae, rare *Elodea*, and

common *Ceratophyllum*. Collection from rock shelf thalweg. Hand, brush and tray, and dip net collections. 9/3/1992 TF, EJ!

449. North side of Snake River at RM 607.6. Zone 11: 703,660E 4,722,510N. Projected SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 19, T9S R17E, Jerome quad., Jerome Co., Idaho. Snake R.-Columbia R. N. side of the Snake River at RM 607.6, just W. of an abandoned bridge. Elev. 3055'. River with potholed basalt bedrock lined channel. Bedrock knobs present. Collection was recent drift sample. 7/2/1991 TF, EJ! 9/3/1992 TF, EJ!

450. Center of Sliger's Pool. Zone 11: 701,980E 4,722,840N. Projected NW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 24, T9S R16E, Jerome quad., Jerome Co., Idaho. Snake R.-Columbia R. Sliger's Pool approximately at geographic center, approximately 65' depth. Elev. 2990'. Mud-fine gravel substrate. Anoxic just below or at surface. Bulk collection of 16 oz. of sediment made by EPA divers. 9/1/1992 DK!

462. Minidoka Dam 1. NW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 1, T9S R25E, Lake Walcott West quad., Minidoka Co., Idaho. Snake R.-Columbia R. Boulder rapids on the N. side of Snake River at RM 574.6, near public boat launch above pool, 0.4 mi. downstream (W.) of Minidoka Dam. Sample taken 9' from N. shore and 19' from high-water mark. Elev. 4140'. Depth 2". River with cobble-boulder substrate with pockets of mud, sand and fine gravel on bedrock (basalt) substrate. Scattered *Potamogeton pectinatus* patches; mixed epiphytic crust on boulders. Abundant and diverse epiphytic algae; rare sponge, fungal patches; rare blue-green algae ("Nostoc"). Sample is gravel-mud from pockets between boulders. Probably partially older drift. Abundant dead mollusks (mostly lymnaeids); few live lymnaeids, physids, sphaeriids. Common dead *Fluminicola "hindsi"* and *Vorticifex effusa*. Dip net collection. 9/26/1992 TF, EJ!

463. Minidoka Dam 2. SW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 1, T9S R25E, Lake Walcott West quad., Cassia Co., Idaho. Snake R.-Columbia R. Boulder rapids at about mid-channel in the Snake River at RM 574.6, near public boat launch just above pool, 0.4 mi. downstream (W.) of Minidoka Dam. Sample taken 75' from N. shore and 84' from high-water mark. Elev. 4140'. Depth 18 $\frac{1}{4}$ ". River with cobble-boulders on bedrock (basalt) substrate. Cobbles and boulders are cemented to the bottom, most encrusted with diverse epiphytic algae. Abundant *Cladophora*, flat green algae, uncommon *Potamogeton pectinatus*, rare blue-green algae ("Nostoc"). Rapid flow rate. *Physella* only, rare. Hand, brush and tray, dip net collections. 9/26/1992 TF, EJ!

464. Minidoka Dam 3. SW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 1, T9S R25E, Lake Walcott West quad., Cassia Co., Idaho. Snake R.-Columbia R. N. side of Snake River at RM 574.7, 0.1 mi. upstream from rapids, 0.3 mi. downstream (W.) of Minidoka Dam. Sample taken 100' from N. shore and 111' from high-water mark. Elev. 4140'. Depth 12". River with cobble-boulders on bedrock (basalt) bottom, with minor potholes in which sand and gravel substrate occur. Most larger boulders are cemented to the bottom (some with their tops above water). *Potamogeton pectinatus* in sand-gravel patches; all exposed surfaces (except seasonally air-exposed) covered with algae. Mostly *Cladophora*, blue green algae, fungi, ?sponge patches, uncommon blue-green algal balls ("Nostoc"). Sample probably partially older drift. Abundant dead mollusks (mostly lymnaeids); few live lymnaeids, physids, sphaeriids. Common dead *Fluminicola "hindsi"* and *Vorticifex effusa*. Hand, brush and tray, dip net collections. 9/26/1992 TF, EJ!

465. Minidoka Dam 4. SE<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 1, T9S R25E, Lake Walcott West quad., Cassia Co., Idaho. Snake R.-Columbia R. Middle of Snake River at RM 574.7, 0.1 mi. upstream from rapids, 0.3 RM downstream (W.) of Minidoka Dam. Sample taken 200' from N. shore and 211' from high-water mark, near edge of deeper channel (thalweg). Elev. 4140'. Depth 18". River with bare basalt bedrock with uncommon boulders, cobbles, sand and gravel in potholes. Most large liths are cemented to the bottom. Scattered *Potamogeton pectinatus* in sand-gravel patches.

Abundant epiphytic algae (many kinds, including blue-green) on all exposed rock sides (rarer on rocks likely to be exposed). Small patches of fungi-bacterial slime on rocks; uncommon *Nostoc*, ?*Rivularia*. Live *Physella* and others very spotty; locally common; mostly juveniles. Hand, brush and tray, dip net collections. 9/26/1992 TF, EJ!

466. Minidoka Dam 5. SW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 1, T9S R25E, Lake Walcott West quad., Minidoka Co., Idaho. Snake R.-Columbia R. N. side of Snake River at RM 674.8, 0.2 mi. above rapids, 0.2 mi. downstream (W.) of Minidoka Dam. Sample taken 100' from N. shore and 106' from high-water mark. Elev. 4140'. Depth 18". River with mud, gravel, cobbles and boulders (many welded to the bottom) over a basalt bedrock substrate. *Potamogeton pectinatus* common at this site. Algae covers most boulders. Mollusks collected by hand, tray and brush, and dip net. 9/26/1992 TF, EJ!

467. Minidoka Dam 6. NW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 1, T9S R25E, Lake Walcott West quad., Cassia Co., Idaho. Snake R.-Columbia R. Mid-channel of Snake River at RM 674.8, 0.2 mi. above rapids, 0.2 mi. downstream (W.) of Minidoka Dam. Sample taken 150' from N. shore and 156' from high-water mark, at edge of main channel (thalweg). Elev. 4140'. Depth 18-38". River with *Potamogeton pectinatus* beds in gravel and mud with larger liths common on bedrock (basalt) surface; boulders and cobbles almost completely submerged; slightly turbid; moderate velocity. Common epiphytic algae on *Potamogeton pectinatus*; abundant and diverse on exposed rock surfaces; uncommon *Nostoc*. Snails collected from *Potamogeton pectinatus*, boulders and cobbles. Abundant *Gyraulus parvus* on *Potamogeton pectinatus*; lymnaeids and physids most common on rocks. Hand, brush and tray, and dip net. 9/26/1992 TF, EJ!

468. Minidoka Dam 7. SW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> sec. 1, T9S R25E, Lake Walcott West quad., Minidoka Co., Idaho. Snake R.-Columbia R. N. side of Snake River at RM 674.9, near Minidoka Dam outfall (0.1 mi. below). Sample taken 9' from N. shore and 12' from high-water mark at edge of deep channel (thalweg) and rapids. Elev. 4140'. Depth 18". River with mostly boulders; few scattered cobbles, gravel patches; uncommon *Potamogeton pectinatus*; rapid velocity; algal flora diverse on exposed rock; common *Rivularia* and *Nostoc*. Mollusks rare; physids and rare *Gyraulus parvus*. Dip net, brush and tray samples. 9/26/1992 TF, EJ!

469. Minidoka Dam 8. NE<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> NE<sub>1/4</sub> sec. 2, T9S R25E, Lake Walcott West quad., Minidoka Co., Idaho. Snake R.-Columbia R. Pool about 0.1 mi. below rapids on N. side of Snake River at RM 674.5, below public boat ramp, about 0.7 mi. downstream (W.) of Minidoka Dam. Sample collected 200' from N. shore, 212' from high-water mark. Elev. 4140'. Depth 36<sup>1/4</sup>". River with deep, relatively quiet pool; gravel substrate (mixed lithologies); low velocity; no macrophytes, although common *Ceratophyllum* occurs E. of the pool; bare gravel with almost no epiphytes. No live mollusks seen. Old, long-dead *Fluminicola "hindsii"* some in pool relatively recent dead. Dip net collection. 9/26/1992 TF, EJ!

470. Minidoka Dam 9. NE<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> NE<sub>1/4</sub> sec. 2, T9S R25E, Lake Walcott West quad., Cassia Co., Idaho. Snake R.-Columbia R. Boulder rapids ca. 100' from spillway edge (basalt cliff, ca. 10' in height) on S. side of Snake River at RM 674.6, opposite sites 1 and 2, about 0.4 mi. downstream (W.) of Minidoka Dam. Elev. 4140'. Depth 36". River with common loose and cemented boulders; bedrock not obvious; common sponge, abundant epiphytic algae on exposed rock surfaces; few macrophytes (some *Potamogeton pectinatus*); some fungi on under surfaces; some *Rivularia* (small); swift current. Snails rather uncommon. Hand, tray and brush, and dip net collections. 9/26/1992 TF, EJ!

471. Minidoka Dam 10. NW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 1, T9S R25E, Lake Walcott West quad., Cassia Co., Idaho. Snake R.-Columbia R. Pool behind rock berm (loose boulders- possible submerged in high water), just E. of spillway area along basalt "cliff" edge on the S. side of the

Snake River at RM 674.65, 0.35 mi. downstream from (W. of) Minidoka Dam. Elev. 4140'. Depth 36". Relatively cold pool (ground water inflow at cliff edge). Mud substrate (oxygenated) with gravel patches; scattered *Potamogeton pectinatus*; moderate velocity. Uncommon live *Valvata utahensis* in T-shaped area about 28' W.-E. and about 12' in average width; near center, width to 18 $\frac{1}{4}$ . Dip net collection. 9/26/1992 TF, EJ!

472. Minidoka Dam 11. SW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 1, T9S R25E, Lake Walcott West quad., Cassia Co., Idaho. Snake R.-Columbia R. Shallows about 150' E. of site 10, near S. shore (ca. 60' N. of high-water mark) and 45' N. of edge of *Typha* marsh, Snake River at RM 674.65, 0.25 mi. downstream (W. of) from Minidoka Dam. Elev. 4140'. Depth 6-12". River with gravel-mud flat offshore from *Typha* marsh; slow current; no macrophytes present; minor epiphytic algae on sediment surface. Very few mollusks seen. Dip net collection. 9/26/1992 TF, EJ!

473. Minidoka Dam 12. SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 1, T9S R25E, Lake Walcott West quad., Cassia Co., Idaho. Snake R.-Columbia R. Basalt bedrock in E. side of spillway channel (now dry), ca. 250' S. of spillway edge, below Minidoka Dam, S. side of Snake R. Elev. 4160'. Dry channel. Water allowed to flow in channel during the winter. Drift sample on dry *Potamogeton pectinatus*. Scattered *Valvata utahensis*, some recent dead. Hand collected, sieved in the field. 9/26/1992 TF, EJ!

474. Minidoka Dam 13. NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 2, T9S R25E, Lake Walcott West quad., Cassia Co., Idaho. Snake R.-Columbia R. Lower (W.) permanent lake in spillway area below Minidoka Dam, S. side of Snake River. Elev. 4150'. Depth 36". Mud, sand and medium gravel over basalt bedrock surface; no macrophytes; no current; cold, slightly turbid lake in spillway. Single valve of freshly dead *Anodonta californiensis*; several long-dead and three immature live *Valvata utahensis*; long-dead *Fluminicola thindsi*; few live sphaeriids. Dip net collected. 9/26/1992 TF, EJ!

475. Minidoka Dam 14. SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 1, T9S R25E, Lake Walcott West quad., Cassia Co., Idaho. Snake R.-Columbia R. Upper (E.) permanent lake in upper spillway area on S. side of Snake River below Minidoka, ca. 75' from S. shore. Elev. 4170'. Depth 13". Mud, sand and fine gravel; scattered *Potamogeton pectinatus* elsewhere in lake; few epiphytic algae on sediment surface; no current; cold lake. Dip net collection, but no live mollusks seen. 9/26/1992 TF, EJ!

476. Lake Walcott at Walcott Park. NE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 1, T9S R25E, Lake Walcott West quad., Minidoka Co., Idaho. Snake R.-Columbia R. Just W. of public boat ramp in Walcott Park (Minidoka National Wildlife Refuge), near Minidoka Co. line, ca. 82' offshore (from current shore), 102' from high-water mark, N. shore of Walcott Lake (Snake River at RM 675.7). Elev. 4195'. Depth 40". Reservoir with poorly oxygenated mud offshore; sand and gravel near shore; abundant macrophytes such as *Potamogeton crispus*, *Potamogeton pectinatus*, *Ceratophyllum*; some epiphytic algae on macrophytes. Thin stemmed macrophytes up to 8' or more in length. Live *Valvata utahensis*, *Valvata humeralis*, recently dead *Anodonta californiensis*; common *Physella*. Dip net collection. 9/26/1992 TF, EJ!

477. Walcott Park at boat ramp. SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 36, T8S R25E, Lake Walcott West quad., Minidoka Co., Idaho. Snake R.-Columbia R. Beach at high-water mark, public boat ramp in Walcott Park (Minidoka National Wildlife Refuge), near Minidoka Co. line, N. shore of Lake Walcott (Snake River RM 675.7). Elev. 4200'. Reservoir beach at high-water mark. Drift sample, partially sieved in field. 9/26/1992 TF, EJ!

478. Massacre Rocks State Park at boat ramp. Zone 12: 335,760E 4,724,950N. projected NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 1, T9S R29E, Register Rock quad., Power Co., Idaho. Snake R.-

Columbia R. At high-water mark just S. of public boat ramp in Massacre Rocks State Park (W. end) on the E. side of the Snake River (Lake Walcott), opposite Mowers Spring. Elev. 4195'. Sandy reservoir beach at high-water mark. Uncommon recently dead and long dead (including possible Pleistocene fossils) *Promenetus exacuous*, *Valvata humeralis*; recently dead *Anodonta californiensis*; long-dead *Fluminicola "hindsii"* are. Drift sample, partially sieved in field. Recently-dead hydrobiid noted in picking (could be small *Pyrgulopsis* or unusually tall *Lyogyrus*). 9/27/1992 TF, EJ!

500. Snake River rapids at RM 595.1. SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 6, T9S R15E, Niagara Springs quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Sportsman access at a rapids on the S. side of Snake River at RM 595.1 River rapids (now mostly drowned). Boulders common on both sides of the river, less common in the central channel. Mud and gravel bottom. *Zannichellia* common. *Elodea* sp. and *Potamogeton crispus* are present. 2/3 of clams killed by raccoons were *Anodonta californiensis* and 1/3 were *Gonidea angulata* at this site. Collection by hand and dip net along 500' transect. 7/13/1991 TF, EJ!

501. Snake River rapids at RM 595.6. S $\frac{1}{2}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 6, T9S R15E, Niagara Springs quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Rapids on S. side of an island at RM 595.6. River rapids with boulder and cobble bottom off-shore with a sand and silt bottom near shore. Rocks are heavily calcium carbonate encrusted. Scattered *Rorippa* on edges of the rapids. Abundant green filamentous algae, uncommon *Zannichellia* sp., *Ceratophyllum* sp. Sponges are present on rocks. Transect length 300'. Hand and dip net collected. 7/13/1991 TF, EJ!

502. Lower and middle Boulder Rapids. SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 4, T9S R15E, Niagara Springs quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Lower and middle Boulder Rapids along the S. bank at RM 597. Rapids and deep channel. Rocks heavily coated by filamentous algae. Snails collected on rapids edge off boulders. Long dead *Margaritifera falcata* and recently-dead *Anodonta californiensis*. 625' transect. Outfall of proposed Boulder Rapids project. 7/13/1991 TF, EJ!

503. Upper Boulder Rapids. NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 9, T9S R15E, Niagara Springs quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Upper section of Boulder Rapids along S. bank of the Snake River at RM 597.4. River with cobble and mud substrate. Filamentous algae abundant. *Lemna minor* and *major* common. Collection by dip net and hand. 280' transect. Intake of proposed project at Boulder Rapids. 7/13/1991 TF, EJ!

504. Pool below Kanaka Rapids. SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 10, T9S R14E, Thousand Springs quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Pool below Kanaka Rapids on the S. side of the Snake River. River with rocky bottom with mud patchily distributed. Abundant filamentous algae. Mediocre habitat for mollusks. Collection by hand and dip net. 100' transect on S. side of river. Outfall of proposed project. 7/14/1991 TF, EJ!

505. Lower Kanaka Rapids. NW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 10, T9S R14E, Thousand Springs quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Lower part of Kanaka Rapids on S. side of the Snake River. Side channel adjacent to main channel. River rapids. Channel bedrock, boulders, gravel and mud bottom. Collection by dip net and hand. Live and dead *Fisherola nuttalli* found at this site. 200' transect. 7/14/1991 TF, EJ!

506. Middle Kanaka Rapids. NE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 10, T9S R14E, Thousand Springs quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Middle part of main channel of Kanaka Rapids on S. side of the Snake River. River rapids. Potholed basalt bedrock and boulders. Gravel in places. Collection by hand and dip net. 180' transect. Found no specimens of *Fisherola nuttalli* in this stretch. 7/14/1991 TF, EJ!

507. Upper Kanaka Rapids. NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 10, T9S R14E, Thousand Springs quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Upper part of Kanaka Rapids on the S. side of Snake River. River rapids. Cobble bottom. Abundant sponges and bryozoans on cobbles. Collection by hand and dip net. 125' transect near proposed project weir site.

7/14/1991 TF, EJ!

508. Snake River east of Kanaka Rapids. NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 10, T9S R14E, Thousand Springs quad., Twin Falls Co., Idaho. Snake R.-Columbia R. Pool to E. of Kanaka Rapids on S. side of the Snake R. River pool with mud covered bedrock bottom. Semi-reducing environment. Algae and rooted vegetation abundant (such as *Myriophyllum* sp.) Carp abundant (spawning). Collection by dip net. 3 short transects with combined length of 300'. Near proposed project intake. 7/14/1991 TF, EJ!

509. Idaho. Snake R.-Columbia R. Pool below Empire Rapids, N. side of Snake River. River at mud and silt bottomed pool. *Zannichellia* sp. and common *Ceratophyllum* sp. Abundant filamentous algae. Also present is *Elodea* sp., duck weed, *Potamogeton crispus* and a net like algae. Black mud present in which not much lives. Collection by hand and dip net. 150' transect. Area of proposed Empire Rapids project outfall. 07/15/1991 TF, EJ!

510. Idaho. Snake R.-Columbia R. Spring fed side channel on N. side of Snake River, upper Empire Rapids. River rapids. Cobbles, sand and mud bottom. Collection by dip net and hand. Combined 300' transect below proposed Empire Rapids project intake. 07/15/1991 TF, EJ!

511. North side of Snake River above Empire Rapids. Zone 11: 683,760E 4,726,860N. Projected NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 1, T9S R14E, Thousand Springs quad., Gooding Co., Idaho. Snake R.-Columbia R. Spring-fed (?) pool, N. side of Snake River above Empire Rapids, RM 594.27. Elev. 2935'. Depth 1-4'. River pool above rapids. Cobbles, sand and anoxic mud bottom. Collection by dip net and hand. 150' transect in area of proposed Empire Rapids project intake. Single specimen of a recent dead *Valvata utahensis* was found at this site. 07/15/1991 TF, EJ!

512. Idaho. Snake R.-Columbia R. Boulder rapids on the N. side of the Snake River at high-water mark. River with potholed basalt bedrock with "boulder" knobs. Collection by hand. Drift sample. Site at proposed jetty of Boulder Rapids project. 07/08/1991 TF, EJ!

513. Lower Kanaka Rapids. SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 10, T9S R14E, Thousand Springs quad., Twin Falls Co., Idaho. Snake R.-Columbia R. South bank of Snake R., lower Kanaka Rapids. Collection by hand. Drift sample. 7/14/1991 TF, EJ!

514. Idaho. Snake R.-Columbia R. Upper part of Boulder Rapids on the N. side of the Snake River. Drowned rapids. Oxygen reduced mud environment. Habitat poor for cold-water mollusc. Abundant filamentous algae. Collection by dip net. 180' transect in area of proposed of proposed jetty of Boulder Rapids project. 07/08/1991 TF, EJ!

577. Idaho. Cow Cr.-Salmon R.-Snake R.-Columbia R., Seven Devils Mts. Logged-up unnamed spring, Phillips Ridge, above Cow Creek. Elev. 3480'. Cold spring. 06/02/1990 TF, EJ, SN!

579. Idaho. Snake R.-Columbia R., Seven Devils Mts., Hells Canyon. Unnamed Spring just S. of Hells Canyon Dam, on the E. side of the Snake River in Hells Canyon. Elev. 1600'. Cold spring. 08/08/1989 TF, EJ!

857. Unnamed spring opposite Cove Power Plant. Zone 12: 434,010E 4,707,000N. SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 32, T10S R40E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Fish Creek Range, Gentile Valley. Unnamed spring below Gentile Valley Road (E. side), opposite Cove Power Plant W. of Bear River, W. side of Gentile Valley. Elev. 4980'. Depth 0.25-2'. Very shallow cold spring, densely *Rorippa*-covered, mud-fine gravel substrate. Spring pool quite large though shallow. Snails very abundant at spring edges facing roadbed. Small orange, *Lyogyrus* - like *Pyrgulopsis* species; males common; not dimorphic. Collected by dip net; snails shaken off *Rorippa* into pail. 9/5/1992 TF, EJ, SW!

858. Kackley Spring. Zone 12: 435,040E 4,709,120N. SW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 21, T10S R40E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gem Valley. Kackley Spring and spring lake E. of Cove Power Plant access road, S. of Grace Power Plant, E. of Bear River. Elev. 5040'. Depth 2-28". Large cold spring run and pool. Substrate dominantly mud-gravel; cobbles-boulders near source; gravel bars and rapids in one area. Velocity slow to moderate. Origin from basalt talus. Some grazing impact. W. part of system and some of E. modified. Spring drains into moderate-sized impoundment. Large amphipods abundant. Large *Pyrgulopsis*, dimorphic?, tall with slightly disjunct final whorl. Males small, very rare. Dip net and pail collections. 9/5/1992 TF, EJ, SW!

859. First unnamed spring south of Kackley Spring. Zone 12: 434,990E 4,709,000N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 27, T10S R40E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gem Valley. Unnamed spring originating at base of basalt talus in Bear River valley, first spring S. of Kackley Spring, S. of Grace Power Plant, E. of Bear River and Cove Power Plant access road. Elev. 5040'. Depth 2-8". Medium-sized cold spring, moderate velocity. Mostly *Rorippa* covered; gravel-sand substrate. Spring drains into moderate-sized impoundment (same as Kackley Spring). Relatively minor grazing impact. Full ontogeny: abundant *Lyogyrus*; uncommon *Pyrgulopsis* (same as Kackley Spring; males very rare); common lymnaeids. Collected by dip net and hand. 9/5/1992 TF, EJ, SW!

860. Second unnamed spring south of Kackley Spring. Zone 12: 434,970E 4,708,990N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 28, T10S R40E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gem. Unnamed spring and spring run draining into a sizable marshy lake S. of Grace Power Plan. Second spring S. of Kackley Spring. Elev. 5040'. Depth 1-6". Small cold spring with travertine "gravel" limy mud; very narrow channel (24" or less). Low *Rorippa*: eventually *Typha-Rorippa* in marsh. Badly impacted by grazing. *Pyrgulopsis* common; few full adults (very few males) same as Kackley Spring. Collected by dip net. 9/5/1992 TF, EJ, SW!

861. Third unnamed spring south of Kackley Spring. Zone 12: 434,800E 4,708,840N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 28, T10S R40E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gem Valley. Unnamed spring draining into small partly artificial impoundment. Third spring S. of Kackley Spring, S. of Grace Power Plant. Elev. 5030'. Depth 2-14". Moderate-sized cold spring with slow-moderate current; boulders at origin; mud-travertine "gravel" elsewhere. *Rorippa* very common. Drains from basalt talus. Common *Lyogyrus*, *Pyrgulopsis* (males rare; same species as Kackley Spring) relaxed well; lymnaeids and physids common. Collected by dip net. Moderate-heavy grazing impact. 9/5/1992 TF, EJ, SW!

862. Big Spring. Zone 12: 473,200E 4,707,060N. SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 28, T10S R44E, Harrington Peak quad., Bear Lake Co., Idaho. Left Hand Fk. Georgetown Cr.-Georgetown Cr.-Bear Lk.-Bear R.-Great Salt Lk., Preuss Range. Large spring and marsh in creek bed on E. side of FS95 in Left Hand Fork of Georgetown Canyon, 0.2 mi. N. of Ralph Canyon. Elev. 6530'. Depth 8-11". Cold spring with abundant *Rorippa*; *Chara* in small deep cutoff. Flow velocity moderate to swift. Gravel-cobble substrate. Rock maple, conifers in surrounding forest. *Salix*, chokecherry common. Snails uncommon; best on rocks and in slower flow. *Lyogyrus* uncommon

(gray body, upper tentacles blacker); moderately successful relaxation. Some grazing impact. Collected by dip net and pail. 9/6/1992 TF, EJ, SW!

863. Talus in Right Hand Fork of Georgetown Canyon. Zone 12: 474,440E 4,704,020N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 4, T11S R44E, Georgetown 1970 quad., Bear Lake Co., Idaho. Right Hand Fk. Georgetown Cr. Georgetown Cr.-Bear Lk.-Bear R.-Great Salt Lk., Preuss Range. Rather open limestone talus above (N. of) spring run near border of Cache National Forest, about 0.6 mi. up FS425 from junction with FS102 (Georgetown Canyon Road) in Right Hand Fork of Georgetown Canyon. Elev. 6380'. Open, shallow, comparatively dry SW-facing slope, moderately grazed, partly burned, with rare *Pinus* & *Abies*, *Heuchera*, *Rosa*, thistles. *Oreohelix* common in protected area, e.g. beneath debris piles. Almost all subadult-adult. Collected by hand. 09/06/1992 TF, EJ, SW!

864. Lower spring in Right Hand Fork of Georgetown Canyon. Zone 12: 474,550E 4,703,900N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 4, T11S R44E, Georgetown quad., Bear Lake Co., Idaho. Right Hand Fk. Of Georgetown Cr.-Georgetown Cr.-Bear Lk.-Bear Lk.-Great Salt Lk., Preuss Range. Unnamed spring run to N. of FS425 about 0.7 mi. from junction with Georgetown Canyon Road (FS102) in Right Hand Fork of Georgetown Canyon, near border of Caribou National Forest. Elev. 6400'. Depth 1-5". Shallow spring run with scattered *Rorippa*; limestone and quartzite cobbles in creek. Slow to moderate current. Substrate varies from cobbles to mud. *Lyogyrus* rare except near source (covered with *Pinus* limbs). Same *Lyogyrus* species as Big Spring. Poor relaxation. Collected by hand and dip net. Moderately to heavily grazed. 9/6/1992 TF, EJ, SW!

865. Upper spring in Right Hand Fork of Georgetown Canyon. Zone 12: 475,620E 4,703,440N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 10, T11S R44E, Georgetown quad., Bear Lake Co., Idaho. Right Hand Fk. Georgetown Cr.-Georgetown Cr.-Bear Lk.-Bear R-Great Salt Lk., Preuss Range. Narrow run below capped spring, S. side of FS425, 1.3 mi. from Georgetown Canyon Road (FS102) in Right Hand Fork of Georgetown Canyon, Caribou National Forest. Elev. 6560'. Depth 4". Cold spring run in scattered *Pinus*, *Cornus stolonifera*, *Salix*. Only about 60 *Lyogyrus* specimens; some well relaxed; same *Lyogyrus* species as Big Spring. Hand collected. Whole area grazed except for fenced capped spring. Probably formerly a major spring. 9/6/1992 TF, EJ, SW!

866. Spring run across from Saint Charles Campground. Zone 12: 463,050E 4,662,300N. NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 17, R15S T43E, St. Charles quad., Bear Lake Co., Idaho. Bear R.-Great Salt Lk., Bear River Range. Unnamed spring run across from St. Charles Campground on N. side of FS412, St. Charles Canyon, Cache National Forest. Elev. 6360'. Depth 2-8". Cold spring run with dense *Chara*, *Rorippa* in patches. Hydrobiids very abundant; large *Pyrgulopsis*, rather tall; males uncommon; well relaxed. Collected by dip net. Moderate grazing pressure. Peter Hovingh site also? 9/6/1992 TF, EJ, SW!

867. Talus at west end of Paris Campground Loop. Zone 12: 459,100E 4,672,780N. SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 13, T14S R42E, Paris 1980 quad., Bear Lake Co., Idaho. Paris Cr.-Bear R.-Great Salt Lk., Bear River Range. Shallow S.-facing limestone talus base in partly open forest at W. end of Paris Campground loop (origin of path to Paris Spring), terminus of FS427, Cache National Forest. Elev. 6480'. Partly open *Pinus* forest, rather dry, with *Celtis*, common grasses, scattered limestone boulders. Cache National Forest administered by the Caribou National Forest. Hand collected. 09/06/1992 TF, EJ, SW!

868. Paris Canyon spring 1. Zone 12: 460,550E 4,673,380N. Projected NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 7, T14S R43E, Paris quad., Bear Lake Co., Idaho. Paris Cr.-Bear R.-Great Salt Lk., Bear River Range. Small spring on hillside NE of Paris Canyon Road (FS421), just S. of FS443 junction, Paris Canyon. Elev. 6370'. Dry spring. 9/6/1992 TF, EJ, SW!

869. Paris Canyon spring 2. Zone 12: 460,600E 4,673,340N. Projected SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> sec. 7, T14S R43E, Paris quad., Bear Lake Co., Idaho. Paris Cr.-Bear R.-Great Salt Lk., Bear River Range. Small spring on hillside E. of Paris Canyon Road (FS421), ca. 0.1 mi. S. of FS443 junction, Paris Canyon. Elev. 6400'. Nearly dry; cold spring; mud substrate; depth negligible. 9/6/1992 TF, EJ!

870. Crystal Springs. Zone 12: 408,990E 4,723,900N. SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> sec. 3, T9S R37E, Haystack Mountain. quad., Bannock Co., Idaho. West Bob Smith Cr.-Portneuf R.-Snake R.-Columbia R., Portneuf Range. Crystal Springs, narrow trickle from E-most of two cold springs, terminus of Crystal Springs Road. Elev. 5960'. Depth 1-3". Spring with limestone cobbles. Scattered *Rosa* and *Celtis*, rock maples. *Lyogyrus* rare and scattered; full ontogeny; poor relaxation. Snails mostly under the rocks. Hand collected. Spring source capped and diverted for water supply for McCammon. Badly grazed, probably by deer as well as cows. 9/7/1992 TF, EJ!

871. Talus behind Crystal Springs. Zone 12: 408,990E 4,723,900N. SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> sec. 3, T9S R37E, Haystack Mtn. 1976 quad., Bannock Co., Idaho. West Bob Smith Cr.-Portneuf R.-Snake R.-Columbia R., Portneuf Range. Limestone talus behind building capping Crystal Springs at terminus of Crystal Springs Road. Elev. 5980'. Thinly vegetated limestone talus. *Rosa*, Rock maples, scattered grasses. Considerable dead wood. Badly grazed, probably by deer. Cleared for spring modification. *Oreohelix* common; almost all subadults. Hand collected. 09/07/1992 TF, EJ!

872. Ledger Creek source spring 1. Zone 12: 453,120E 4,723,900N. SW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> sec. 5, T9S R42E, Soda Springs quad., Caribou Co., Idaho. Ledger Cr.-Bear R.-Great Salt Lk., Aspen Range. Moderate-sized source spring to Ledger Creek where it emerges from a covered structure, S. of S. boundary of E. section of Arthur Kelly City Park, NE of Soda Springs. Elev. 6020'. Depth 1-6". Cold, shallow, travertine "gravel" substrate. Abundant *Rorippa*. Emerges from basalt talus. Mostly destroyed by capping (covered structure); moderately to heavily grazed. Uncommon *Lyogyrus*; full ontogeny; poor relaxation. Collected by dip net. 9/5/1992 TF, EJ, SW!

873. Ledger Creek source spring 2. Zone 12: 453,180E 4,724,600N. SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 5, T9S R42E, Soda Springs quad., Caribou Co., Idaho. Ledger Cr.-Bear R.-Great Salt Lk., Aspen Range. Spring on E. side of Ledger Creek N. of lake, NE of Arthur Kelly City Park, NE of Soda Springs. Elev. 5860'. Spring dug out recently, now dry. 9/5/1992 TF, EJ, SW!

874. Source spring 3 of Ledger Creek. Zone 12: 453,140E 4,723,940N. SW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> sec. 5, T9N R42E, Soda Springs quad., Caribou Co., Idaho. Ledger Cr.-Bear R.-Great Salt Lk., Aspen Range. Unnamed spring against basalt cliff W. of Ledger Creek channel and N. of lake, N. of Kelly Park, NE of Soda Springs. Elev. 5870'. Spring is now dry (diverted). 9/5/1992 TF, EJ, SW!

875. Unnamed spring in Arthur Kelly City Park. Zone 12: 452,750E 4,724,320N. SE<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> sec. 5, T4S R42E, Soda Springs quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Aspen Range. Small unnamed source spring against base of narrow basalt ridge through Arthur Kelly City Park; W. side, E. source spring of N. spring run, NE of Soda Springs. Elev. 6020'. Depth 2-18". Pond and shallow cold spring run. Pond quiet, open, with deciduous leaves. Travertine "gravel" substrate. Low flow rate in spring. *Rorippa* abundant. Spring shaded, in largely deciduous forest. Source modified; concrete retaining wall. *Lyogyrus* moderately common. Poor relaxation; gray body. Collected by dip net. 9/5/1992 TF, EJ, SW!

876. Spring run in Arthur Kelly City Park. Zone 12: 452,630E 4,724,350N. NE<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> sec. 5, T4S R42E, Soda Springs quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Aspen Range. Large spring run at S. end of lake in Arthur Kelly City Park, W. side, N. end, W. spring, on

S. side of access road just N. of trailer court, 1.5 mi. NE of Soda Springs. Elev. 6010'. Depth 6-28". Large cold spring run with abundant *Rorippa*. Velocity slow to moderate. Substrate mostly mud. Area partly forested. *Pyrgulopsis* very abundant. Two species (?) or one dimorphic), one large and rather elongate low spire, the other smaller with convex whorls and high spire. Males rare. Third very rare small taxon; rare *Lyogyrus*. Collected by dip net. 9/5/1992 TF, EJ, SW! Recollected, dip net and tray. Large dimorphic *Pyrgulopsis*; very rare *Lyogyrus*. 8/30/1994 TF, EJ, JJ!

877. Formation Springs Preserve. Zone 12: 454,720E 4,727,000N. NW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> sec. 28 T8S R42E, Soda Springs quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Aspen Range. SE-most permanent pond and channel NE of Formation Cave in Formation Springs Preserve, Idaho Nature Conservancy, off (N. of) Trail Canyon Road (FS124), ca. 1.2 mi. E. from ID34, S. of Conda. Elev. 6110'. Depth 4-16". Pond and channel with common water hemlock, *Rorippa*, some *Potamogeton filiformis* in channel. Travertine "gravel" in channel. Cold spring run with slow to moderate velocity. Abundant small, high-spined *Pyrgulopsis*, well relaxed. Rare small *Physa*, also probably new. Collected by dip net. 9/21/1991 TF, EJ! *Pyrgulopsis* and other mollusks collected by dip net. 9/6/1992 TF, EJ, SW! Recollect, dip net & tray collections. 8/30/1994 TF, EJ, JJ

878. Formation Springs Preserve. Zone 12: 454,720E 4,726,990N. NW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> sec. 28 T8S R42E, Soda Springs 1982 quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Aspen Range. S. side of S.-most permanent pond and channel, near channel and pond junction N. of Formation Cave in Formation Springs Preserve, Idaho Nature Conservancy, off (N. of) Trail Canyon Road (FS124), ca. 1.2 mi. E. of ID34, S. of Conda. Elev. 6110'. Fairly open grassland with scattered *Juniperus*. Common brushy thickets with *Urtica*, *Rosa*, beggars' lice, *Prunus*. *Oreohelix* sparse; mostly subadult; generally under thickest brush. Hand collected. 09/06/1992 TF, EJ, SW!

879. West Fork Mink Creek 1. Zone 12: 383,060E 4,731,220N. NW<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> sec. 13, T8S R34E, Clifton Creek quad., Bannock Co., Idaho. W. Fk. Mink Cr.-Mink Cr.-Portneuf R.-Snake R.-Columbia R., Bannock Range. Collapsed pipe from spring source and adjacent part of West Fork of Mink Creek, about 0.7 mi. W. of Mink Creek Road (Bannock Highway) (FS231), S. of Pocatello, Caribou National Forest. Elev. 5360'. Depth 0-4". Narrow and shallow spring run with abundant *Rorippa*; swift flow; mud and gravel substrate. Spring not shown on USGS map. Collection from collapsed part of piped system probably originating at spring source. 2 species of *Pyrgulopsis*, smaller more abundant than larger. Males for both are very rare, both possibly dimorphic. Very rare *Lyogyrus*? Good relaxation. Dip net collection. 9/4/1992 TF, EJ!

880. West Fork Mink Creek 2. Zone 12: 383,420E 4,730,960N. SW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> sec. 13, T8S R34E, Clifton Creek 1968 quad., Bannock Co., Idaho. W. Fk. Mink Cr.-Mink Cr.-Portneuf R.-Snake R.-Columbia R., Bannock Range. *Urtica* thicket on NE side of West Fork Mink Creek just N. of Forest Service Trail 059 (former road) crossing in limestone cobble debris, about 0.4 mi. W. from Mink Creek Road (Bannock Highway) (FS231), S. of Pocatello, Cache National Forest. Elev. 5310'. *Urtica* patch with some limestone cobbles. *Oreohelix* are fairly common and are subadult or adult. Hand collected. 09/04/1992 TF, EJ!

881. Thompson Creek. Zone 11: 723,890E 4,677,220N. SW<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> sec. 12 T14S R18E, Pike Mountain quad., Twin Falls Co., Idaho. Thompson Cr.-Fourth Fk. Rock Cr.-Rock Cr.-Snake R.-Columbia R., Goose Creek Mts. Thompson Creek near junction with Fourth Fork Rock Creek on W. side of Rock Creek Road (County G3)(FS515), 2.3 mi. N. of Magic Mountain Ski Area, Sawtooth National Forest. Elev. 6280'. Depth 1-4". Cold creek with a gravel-cobble bottom, no macrophytes. Grazing impact severe. No mollusks found. 9/4/1992 TF, EJ!

882. Elk Butte Spring. Zone 11: 724,500E 4,675,570N. Center SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 18, T14S R19E, Pike Mountain quad., Cassia Co., Idaho. Fourth Fk. Rock Cr.-Rock Cr.-Snake R.-Columbia R., Goose Creek Mts. Elk Butte Spring in gully above Fourth Fork Rock Creek (E. side), E. of Rock Creek Road (County G3)(FS515), 0.9 mi. N. of Magic Mountain Ski Area, Sawtooth National Forest. Elev. 6640'. Spring is now dry. Badly grazed; burned some time in the past. No mollusks found. 9/4/1992 TF, EJ!

883. Spring near Magic Mountain Ski Area. Zone 11: 724,590E 4,674,030N. SE<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> sec. 24, T14S R18E, Pike Mountain quad., Twin Falls Co., Idaho. Fourth Fk.-Rock Cr.-Snake R.-Columbia R., Goose Creek Mts. N. unnamed spring of two to E. of Rock Creek Road (Twin Falls Co. G3)(FS515), E. of Magic Mountain. Ski Area, Minidoka Forest State Bird Sanctuary, Sawtooth National Forest. Elev. 6740'. Dry spring. No mollusks. 9/4/1992 TF, EJ!

884. Spring near Rock Creek Ranger Station. Zone 11: 724,540E 4,673,970N. NW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 25, T14S R18E, Pike Mountain quad., Twin Falls Co., Idaho. Fourth Fk.-Rock Cr.-Snake R.-Columbia R., Goose Creek Mts. S. unnamed spring of two, in gully E. of Rock Creek Ranger Station, E. side of Rock Creek Road (Twin Falls Co. G3)(FS515), SE of Magic Mountain. Ski Area, Minidoka Forest State Bird Sanctuary, Sawtooth National Forest. Elev. 6750'. Dry spring. No mollusks found. 9/4/1992 TF, EJ!

885. Porcupine Spring. Zone 11: 725,850E 4,671,880N. SE<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 31, T14S R19E, Pike Mountain quad., Cassia Co., Idaho. Goose Cr.-Snake R.-Columbia R., Goose Creek Mts. Porcupine Spring, origin of Goose Creek, N. of Rock Creek Road (FS500), Minidoka Forest State Bird Sanctuary, Sawtooth National Forest. Elev. 6960'. Capped cold spring, but some flow. No mollusks found. 9/4/1992 TF, EJ!

886. Spring near source of FS Spring Creek. Zone 11: 727,090E 4,669,980N. SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 5, T15S R19E, Pike Mountain quad., Cassia Co., Idaho. FS Spring Cr.-Goose Cr.-Snake R.-Columbia R., Goose Creek Mts. Unnamed spring adjacent to (W. and below) Monument Peak Road (FS538), near source of FS Spring Creek, Deadline Ridge, Sawtooth National Forest. Elev. 6940'. Depth 0-1". Spring with mud-cobble substrate, no macrophytes. No mollusks found. Area badly grazed. 9/4/1992 TF, EJ!

887. FS Spring. Zone 11: 726,020E 4,669,720N. Center NE<sub>1/4</sub> NE<sub>1/4</sub> NE<sub>1/4</sub> sec. 5, T15S R19E, Pike Mountain quad., Cassia Co., Idaho. FS Spring Cr.-Goose Cr.-Snake R.-Columbia R., Goose Creek Mts. FS Spring in valley of FS Spring Creek about 0.1 mi. W. of Monument Peak Road (FS538), Deadline Ridge, Sawtooth National Forest. Elev. 6850'. Cold spring. Troughed and piped. No mollusks found. 9/4/1992 TF, EJ!

888. Grouse Spring. Zone 11: 731,020E 4,669,720N. NW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> sec. 3, T15S R19E, Trapper Peak quad., Cassia Co., Idaho. Trapper Cr.-Goose Cr.-Snake R.-Columbia R., Goose Creek Mts. Grouse Spring to W. of FS533 0.1 mi., on S. side of Trapper Peak, W. of Flatiron Mountain., Sawtooth National Forest. Elev. 7320'. Cold spring troughed and piped. Currently no flow. No mollusks. 9/4/1992 TF, EJ!

889. Bostetter Spring. Zone 11: 735,140E 4,671,800N. NE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> sec. 31, T14S R20E, Trapper Peak quad., Cassia Co., Idaho. Big Cottonwood Cr.-Snake R.-Columbia R., Goose Creek Mts. Bostetter Spring, W. of FS526, SE of Bostetter Forest Service Station, N. side of Hudson Ridge, Sawtooth National Forest. Elev. 7320'. Piped cold spring, impacted by heavy grazing. No mollusks. 9/4/1992 TF, EJ! \*

890. Counting Chute Spring. Zone 11: 736,119E 4,672,590N. NE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 32, T14S R20E, Trapper Peak quad., Cassia Co., Idaho. Big Cottonwood Cr.-Snake R.-Columbia

R., Goose Creek Mts. Counting Chute Spring on N. side of Hurricane Ridge, S. of Oakley-Rogerson Road (FS500), Sawtooth National Forest. Elev. 7350'. Spring now dry. No mollusks found. Area badly grazed. 9/4/1992 TF, EJ!

891. 330 Spring. Zone 11: 725,540E 4,688,020N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 8, T13S R19E, Grand View Peak quad., Cassia Co., Idaho. Rock Cr.-Snake R.-Columbia R., Goose Creek Mts. 330 Spring on W. side of Rock Creek in basalt canyon, W. of Rock Creek Road (Cassia Co. G3=FS515), 330 Spring Picnic Ground, about 18.2 mi. S. of US30, Sawtooth National Forest. Elev. 4640'. Spring now dry; no mollusks found. 9/4/1992 TF, EJ!

892. 330 Spring talus. Zone 11: 725,535E 4,688,020N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 8, T13S R19E, Grand View Peak 1976 quad., Cassia Co., Idaho. Rock Cr.-Snake R.-Columbia R., Goose Creek Mts. Basalt talus on W. side of Rock Creek in canyon W. of Rock Creek Road (Cassia Co. G3)(FS515), 330 Spring Picnic Ground, about 18.2 mi. S. of US30, Sawtooth National Forest. Elev. 4640'. Sparse forest with abundant *Equisetum*, *Rosa*, *Celtis*. Many dead shells of *Oreohelix*, some live adults subadults. Hand collected. 09/04/1992 TF, EJ!

893. North Water Spring. Zone 12: 742,420E 4,675,120N. NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 13, T14S R20E, Severe Spring quad., Cassia Co., Idaho. Little Cottonwood Cr.-Goose Cr.-Snake R.-Columbia R., Goose Creek Mts. North Water Spring to W. of Oakley-Rogerson Road (FS500), Minidoka Forest State Bird Sanctuary, Sawtooth National Forest. Elev. 6750'. Depth 0-1 $\frac{1}{4}$ . Cold spring with mud-cobble bottom. No macrophytes. No mollusks. Troughed and heavily grazed. 9/4/1992 TF, EJ!

894. Rock Creek 1. Zone 11: 488,520E 4,919,660N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 26, T13N R7W, Olds Ferry NW 1976 quad., Washington Co., Idaho. Rock Cr.-Snake R.-Columbia R. Rock Creek, just E. of Rock Creek Road, E. of Snake River, NW of Weiser. Elev. 2680'. Depth 0-6'. Small cold creek with basalt cobble substrate, little vegetation. Slow to medium velocity. Rock Creek Road=Mineral Road on USGS map. Rare *Physella* only. Collected by hand & dipnet. 08/31/1992 TF, EJ!

895. Rock Creek spring 1. Zone 11: 489,310E 4,919,430N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 25, T13N R7W, Olds Ferry NW 1976 quad., Washington Co., Idaho. Rock Cr.-Snake R.-Columbia R. Unnamed spring 0.2 mi. up N. tributary to Rock Creek, E. of Snake River, NW of Weiser. Elev. 3040'. Depth 0-1". Barely damp cold spring; no flow. Rock Creek Road=Mineral Road on USGS map. No molluscs present. 08/31/1992 TF, EJ!

896. Hog Creek springs 1. Zone 11: 489,410E 4,913,830N. NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 13, T12N R7W, Olds Ferry NW 1976 quad., Washington Co., Idaho. Hog Cr.-Snake R.-Columbia R. Two unnamed springs just W. of Hog Creek Road and E. of main channel of Hog Creek. Elev. 2980'. Depth 0-6". Cold springs with mud and cobble (basalt) substrate; common *Rorippa*; one quiet pool; slow flow; *Celtis* and *Salix* along banks. Hog Creek Road=Henley Basin Road on USGS map. Collected by dipnet. 08/31/1992 TF, EJ!

897. Hog Creek spring 2. Zone 11: 489,410E 4,913,920N. SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 14, T12N R7W, Olds Ferry NW 1976 quad., Washington Co., Idaho. Hog Cr.-Snake R.-Columbia R. Spring above Hog Creek about 0.1 mi. W. of Hog Creek Road. Elev. 2990'. Medium-sized cold spring. Scattered *Rorippa*. Hog Creek Road=Henley Basin Road on USGS map. Collected by dipnet. 08/31/1992 TF, EJ!

898. Hog Creek spring 3. Zone 11: 489,070E 4,914,270N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 11, T12N R7W, Olds Ferry NW 1976 quad., Washington Co., Idaho. Hog Cr.-Snake R.-Columbia R.

Spring on hillside above Hog Creek about 0.1 mi. W. of Rock Creek Road. Elev. 3040'. Dry spring. Hog Creek Road=Henley Basin Road on USGS map. 08/31/1992 TF, EJ!

899. Hog Creek spring 4. Zone 11: 489,040E 4,914,840N. SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 11, T12N R7W, Olds Ferry NW 1976 quad., Washington Co., Idaho. Hog Cr.-Snake R.-Columbia R. Source spring to Hog Creek in farm yard E. of Rock Creek Road. Elev. 3120'. Dry spring. Hog Creek Road=Henley Basin Road on USGS map. No molluscs found. 08/31/1992 TF, EJ!

900. Hog Creek spring 5. Zone 11: 492,600E 4,910,985N. NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 29, T12N R6W, Olds Ferry SE 1952 quad., Washington Co., Idaho. Hog Cr.-Snake R.-Columbia R., Hells Canyon. Two springs in gully just W. of Hog Creek Road; source of unnamed trib. to Hog Creek. Elev. 2720'. Depth 0-2". Shallow cold springs in sage scrub; slow velocity; common *Rorippa*; *Urtica* and *Rosa* common on edges; muddy-gravelly substrate. Basalt bedrock with alluvium cover. Now called Porters Flat Quad. *Sphaerium* only. Collected by dipnet. 08/31/1992 TF, EJ!

901. Hog Creek spring 6. Zone 11: 492,700E 4,910,660N. NE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 29, T12N R6W, Olds Ferry SE 1952 quad., Washington Co., Idaho. Hog Cr.-Snake R.-Columbia R., Hells Canyon. Shallow cold spring in sage shrub just W. of Hog Creek Road; a source of an unnamed tributary to Hog Creek. Elev. 2720'. Depth 0-2". Cold, shallow spring with mud-gravel substrate; basalt bedrock with alluvium cover. Slow velocity. Common *Rorippa*; *Rosa* and *Urtica* along edges. Now called Porters Flat Quad. *Sphaerium* only. Collected by dipnet. 08/31/1992 TF, EJ!

902. Henley Creek spring 1. Zone 11: 487,680E 4,917,640N. S<sub>1/2</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 35, T13N R7W, Olds Ferry NW 1976 quad., Washington Co., Idaho. Henley Cr.-Rock Cr.-Snake R.-Columbia R., Henley Basin. Henley Creek Spring just E. of Rock Creek Road and tributary to Henley Creek, Henley Basin. Elev. 3040'. Depth 0-1". Very shallow *Rorippa*-covered cold spring with mud substrate. Collected by dipnet. 08/31/1992 TF, EJ!

903. Henley Creek spring 2. Zone 11: 487,780E 4,917,140N. SE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 2, T13N R7W, Olds Ferry NW 1976 quad., Washington Co., Idaho. Henley Cr.-Rock Cr.-Snake R.-Columbia R., Henley Basin. Small cold spring to E. of Rock Creek Road; source of small tributary to Henley Creek, Henley Basin. Elev. 3160'. Depth 0-0.5". Very shallow cold spring. No snails found. 08/31/1992 TF, EJ!

904. Henley Creek spring 3. Zone 11: 487,260E 4,915,680N. Center SE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 10, T12N R7W, Olds Ferry NW 1976 quad., Washington Co., Idaho. Henley Cr.-Rock Cr.-Snake R.-Columbia R., Henley Basin. Spring about 0.3 mi. SW of Rock Creek Road; source of Henley Creek, Henley Basin. Elev. 3380'. Dry spring. No molluscs found. 08/31/1992 TF, EJ!

906. Near Bannock Creek source. Zone 12: 373,180E 4,701,660N. SE<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> sec. 13 & NE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 24, T11S R33E, Arbon quad., Power Co., Idaho. Bannock Cr.-Snake R.-Columbia R., Arbon Valley. Bannock Creek and associated springs near source at Lindley Road bridge, 0.6 mi. E. of Arbon Valley Road, 1.2 mi. E. of Arbon. Elev. 5110'. Depth 0-4". Strongly agriculture-impacted and grazed area, now mud bottom; slow velocity; abundant epiphytic algae. Formerly a large marsh; mostly drained. Heavy grazing impact. *Physella* and sphaeriids not collected. Dip net collection. 9/27/1992 TF, EJ!

907. Spring in Left Fork of Knox Canyon. Zone 12: 362,170E 4,704,780N. SW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> NE<sub>1/4</sub> sec. 11, T11S R32E, Deep Creek Peak quad., Power Co., Idaho. Spring Run-Bannock Cr.-Snake R.-Columbia R., Deep Creek Mts. Unnamed spring and spring run S. of Knox Canyon Road in Left Fork of Knox Canyon. Elev. 6180'. Depth 0-1". Shallow rocky cold spring (limestone

cobble substrate); scattered surviving *Rorippa*. No mollusks seen. Still flowing, but badly grazed, also with human modifications. 9/27/1992 TF, EJ!

911. Third spring west of Britton Spring. Zone 12: 442,475E 4,702,750N. NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 8, T11S R41E, Thatcher quad., Caribou Co., Idaho. Whiskey Cr.-Bear R.-Great Salt Lk. Unnamed spring above Fish Hatchery Road E. of Grace Hatchery; third spring of four W. of Britton Spring, N. of Lago; source tributary to Whiskey Creek. Elev. 5270'. Cold spring emerging from open basalt talus; mostly dry. Grazed; mostly channeled into irrigation ditch. Dip net collection attempted. No mollusks found. 6/8/1992 TF, EJ!

912. Two unnamed springs near mouth of Big Canyon. Zone 12: 335,800E 4,703,330N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 18, T11S R32E, Roy NE quad., Power Co., Idaho. Big Canyon Cr.-S. Fk. Rock Cr.-Rock Cr.-Snake R.-Columbia R., Deep Creek Mts. Two unnamed springs near the mouth of Big Canyon about 0.1 mi. N. of Big Canyon Road, about 4.8 rd. mi. E. of ID37, E. of Rockland Valley, NE of Roy. Elev. 5720-5730'. Depth 0-1". Cold springs. Scattered *Rorippa*. Limestone bedrock as substrate. Springs essentially completely grazed and piped. Few surviving sphaeriids. Dip net collection, not retained. 9/27/1992 TF, EJ!

913. Unnamed spring south of Springdale. Zone 12: 278,890E 4,707,560N. E $\frac{1}{2}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 6, T11S R24E, View quad., Cassia Co., Idaho. Duck Cr.-Snake R.-Columbia R. Large unnamed spring on both sides of 300 South Road and 0.25 mi. W. of 550 East Road. Spring mostly on N. side of 300 South Road. Elev. 4200'. Depth 2-18". Large cold spring; mud-gravel substrate; slow velocity at edges and fast in center. Abundant *Rorippa* at edges; no epiphytic algae except at edges and in quieter water. Heavily grazed (horse pasture). Source of Duck Creek. Not on USGS map. No mollusks noted. Dip net collection. 9/25/1992 TF, EJ!

914. Unnamed spring near mouth of Spring Canyon. Zone 12: 284,200E 4,702,990N. NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 23, T11S R24E, Albion quad., Cassia Co., Idaho. Snake R.-Columbia R., Albion Range. Unnamed spring near mouth of Spring Canyon below (S. of) ID77, 4.7 mi. E. of Declo, SW of East Hills. Elev. 4260'. Spring is now dry. No snails found. 6/5/1992 TF, EJ!

915. Spring in New Canyon. Zone 12: 278,090E 4,683,280N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 19, T13S R24E, Mount Harrison quad., Cassia Co., Idaho. New Canyon Cr.-Cassia Cr.-Raft River-Snake R.-Columbia R., Albion Range. Unnamed spring in New Canyon, at source of New Canyon Creek, off FS560. Elev. 6420'. Depth 1-2". Muddy cold source spring with slow velocity; no surviving macrophytes, schist bedrock. Badly grazed; *Fossaria* (juvenile) and sphaeriids only; not retained. Dip net collection. 9/25/1992 TF, EJ!

916. New Canyon Creek tributary. Zone 12: 279,120E 4,682,500N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 29, T13S R24E, Mount Harrison quad., Cassia Co., Idaho. New Canyon Cr.-Cassia Cr.-Raft R.-Snake R.-Columbia R., Albion Range. Spring-fed tributary to New Canyon Creek within 50' of junction with New Canyon Creek, off FS560. Elev. 6180'. Depth 0-6". Cold spring-fed tributary; mud-gravel substrate with schist cobbles; scattered clumps of *Rorippa*; moderate to slow velocity. Badly grazed. Sphaeriids and *Fossaria* only. Collected by dip net. 9/25/1992 TF, EJ! \*

917. Spring to Cassia Creek tributary. Zone 12: 281,200E 4,681,360N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 28 T13S R24E, Mount Harrison quad., Cassia Co., Idaho. Cassia Cr.-Raft R.-Snake R.-Columbia R., Albion Range. Spring in major bend of FS548 below Clyde Flat, source of tributary to Cassia Creek. Outside and E. of Sawtooth National Forest boundary about 0.2 mi. Elev. 5920'. Spring source dry. Spring piped into two truck tires. No mollusks present. 9/25/1992 TF, EJ!

918. Cassia Creek. Zone 12: 280,540E 4,680,800N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 33, T13S R24E, Mount Harrison quad., Cassia Co., Idaho. Cassia Cr.-Raft River-Snake R.-Columbia R.,

Albion Range. Beaver ponds to N. of FS548 0.25 mi. below confluence of Cold Spring, Flat Canyon and New Canyon creeks, Sawtooth National Forest. Elev. 5960'. Depth 2-20". Cold beaver ponds with *Chara* and epiphytic algae. Substrate mostly muddy. Braided channels. *Salix* and *Cornus stolonifera* on banks. Grazed; most common snail *Gyraulus parvus*; not collected. Dip net collection. 9/25/1992 TF, EJ!

919. Unnamed spring in Howell Canyon. Zone 12: 287,900E 4,689,870N. SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 31, T12S R25E, Connor Ridge quad., Cassia Co., Idaho. Howell Cr.-Summit Cr.-Snake R.-Columbia R., Albion Range. Unnamed spring in Howell Canyon on Howell Canyon Road (FS549) near lowest crossing of Howell Creek, 3.5 mi. W. of ID77. Elev. 6640'. Depth 0-1". Shallow, cold spring run with quartzite cobbles on mud substrate. No macrophytes. In pine forest. Velocity slow. Grazed and modified. No mollusks. 9/25/1992 TF, EJ!

920. Unnamed springs below Pomerelle Road. Zone 12: 290,650E 4,690,300N. S $\frac{1}{2}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 33, T12S R25E, Connor Ridge quad., Cassia Co., Idaho. Summit Cr.-Snake R.-Columbia R., Albion Range. Pair of unnamed springs below (to N. of) Howell Canyon Road (FS549), about 1.4 mi. W. of junction with ID77. Elev. 6060'. Muddy, almost dry spring; scattered *Rorippa*, all immature. Both springs badly grazed. Sphaeriids only; not retained. Dip net collection. 9/25/1992 TF, EJ!

921. Tributary to North Heglar Canyon. Zone 12: 327,530E 4,706,140N. NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 5, T11S R29E, North Heglar Canyon quad., Cassia Co., Idaho. N. Fk. Heglar Cr.-Heglar Cr.-Snake R.-Columbia R., Sublett Range. Spring-fed tributary to North Heglar Canyon near mouth. Just E. of county road 0.2 mi. N. of main North Heglar Canyon Road (FS565), E. of Heglar. Elev. 4980'. Source spring now dry. Not shown on USGS map. No mollusks present. 6/9/1992 TF, EJ!

922. North spring from Lower Heglar Spring. Zone 12: 333,750E 4,700,340N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 26, T11S R29E, North Heglar Canyon quad., Cassia Co., Idaho. N. Fk. Heglar Cr.-Heglar Cr.-Snake R.-Columbia R., Sublett Range. Unnamed spring N. of Lower Heglar Spring, N. most spring of three in Spring Canyon just W. of main North Heglar Canyon, 0.2 mi. off North Heglar Road, Sawtooth National Forest. Elev. 5890'. Cold spring. Destroyed for stock trough by USFS. No mollusks seen. 6/9/1992 TF, EJ!

923. Lower Heglar Spring. Zone 12: 333,800E 4,700,240N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 26, T11S R29E, North Heglar Canyon quad., Cassia Co., Idaho. N. Fk. Heglar Cr.-Heglar Cr.-Snake R.-Columbia R., Sublett Range. Lower Heglar Spring, middle spring of three in Spring Canyon just W. of main North Heglar Canyon, 0.3 mi. off main North Heglar Road (FS565), Sawtooth National Forest. Elev. 5910'. Cold spring. Destroyed for stock trough by USFS. No mollusks seen. 6/9/1992 TF, EJ!

924. South spring from Lower Heglar Spring. Zone 12: 333,830E 4,700,090N. SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 25, T11S R29E, North Heglar Canyon quad., Cassia Co., Idaho. N. Fk. Heglar Cr.-Heglar Cr.-Snake R.-Columbia R., Sublett Range. Unnamed spring S. of Lower Heglar Spring, S.-most spring of three in Spring Canyon just W. of North Heglar Canyon, 0.4 mi. from North Heglar Road (FS565), Sawtooth National Forest. Elev. 5950'. Cold spring. Converted into stock trough by USFS. No mollusks found. 6/9/1992 TF, EJ!

925. Mill Canyon Spring. Zone 12: 334,540E 4,699,360N. SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 25, T11S R29E, North Heglar Canyon quad., Cassia Co., Idaho. N. Fk. Heglar Cr.-Heglar Cr.-Snake R.-Columbia R., Sublett Range. Mill Canyon Spring on W. side of road near the mouth of Mill Canyon off (S. of) North Heglar Road (FS565), S. tributary of North Heglar Canyon, Sawtooth National

Forest. Elev. 5950'. Cold spring. Destroyed for stock trough by USFS. No mollusks found. 6/9/1992 TF, EJ!

926. Upper Heglar Spring. Zone 12: 335,040E 4,698,280N. SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 36, T11S R29E, North Heglar Canyon quad., Cassia Co., Idaho. N. Fk. Heglar Cr.-Heglar Cr.-Snake R.-Columbia R., Sublett Range. Upper Heglar Spring just S. of mouth of Big Rock Canyon on W. side of North Heglar Road (FS565), W. side of North Heglar Canyon, Sawtooth National Forest. Elev. 6120'. Spring now dry. 6/9/1992 TF, EJ!

927. Source spring of Peck Creek. Zone 12: 404,280E 4,704,640N. SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 5, T11S R37E, Downey West quad., Bannock Co., Idaho. Peck Cr.-Portneuf R.-Snake R.-Columbia R. Source spring of Peck Creek between I-15 and present US91 route, W. side of former (old) US91 route, S. of US91/I-15 jct., SW of Virginia. Elev. 4790'. Source spring converted to a pond. Could be Taylor T59-95 (Gregg 7884) "spring at head of Peck Creek, SE sec. 7, T11S R37E". Grazed heavily, no snails. 6/7/1992 TF, EJ!

928. Olsen Road spring. Zone 12: 405,600E 4,704,800N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 5, T11S R37E, Downey West quad., Bannock Co., Idaho. Peck Cr.-Portneuf R.-Snake R.-Columbia R. Spring in unnamed tributary to Peck Creek on W. side of Olsen Road, 0.6 mi. E. of Virginia. Elev. 4850'. Shallow muddy spring, largely destroyed by heavy grazing. No macrophytes. No mollusks seen. 6/7/1992 TF, EJ!

929. Yago Creek 1. Zone 12: 408,860E 4,705,020N. NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T11S R37E, Downey East quad., Bannock Co., Idaho. Yago Cr.-Portneuf R.-Snake R.-Columbia R., Portneuf Range. Yago Creek to E. of Thompson Road crossing, just N. of Newbold Road junction, N. of Downey. Elev. 5200'. Muddy, narrow, spring-fed creek; no macrophytes. Brushy vegetation; shaded cold creek. Dead shells only, not collected. Could be *Lyogyrus* or small *Pyrgulopsis*. 6/7/1992 TF, EJ!

930. Brush Creek spring. Zone 12: 412,460E 4,703,700N. SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 7, T11S R38E, Downey East quad., Bannock Co., Idaho. Brush Cr.-Portneuf R.-Snake R.-Columbia R., Portneuf Range. Spring on S. side of Brush Creek beyond terminus of Brush Creek Road, NE of Downey. Elev. 5780'. Depth 2-12". Medium-sized cold spring with abundant *Rorippa*, travertine gravel substrate. Moderately grazed around the spring. Common small to medium *Pyrgulopsis*; good relaxation; males common. Collected by dip net. 6/7/1992 TF, EJ!

931. Unnamed spring at base of Pelican Ridge 1. Zone 12: 454,290E 4,759,120N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 17, T5S R42E, Henry quad., Caribou Co., Idaho. Meadow Cr.-Blackfoot R.-Snake R.-Columbia R., Chubb Flat. Spring at base of Pelican Ridge on dirt road 3.3 mi. W. of ID34, SW edge of Chubb Flat, NW of Henry, N. of Blackfoot Reservoir (Blackfoot River). Elev. 6260'. Cold spring; no macrophytes; travertine formerly; now mud-cobble. No snails seen. 6/12/1992 TF, EJ!

932. Unnamed spring at base of Pelican Ridge 2. Zone 12: 453,120E 4,759,990N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 7, T5S R42E, Henry quad., Caribou Co., Idaho. Meadow Cr.-Blackfoot R.-Snake R.-Columbia R., Chubb Flat. Spring on E. side of dirt road at base of Pelican Ridge, 1.0 mi. W. of ID34, SW side of Chubb Flat, NW of Henry, N. of Blackfoot Reservoir (Blackfoot River). Elev. 6390'. Dry spring. No snails found. 6/12/1992 TF, EJ!

933. Little Blackfoot River at Henry. Zone 12: 456,900E 4,750,520N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 10, T6S R42E, Henry quad., Caribou Co., Idaho. Little Blackfoot R.-Blackfoot R.-Snake R.-Columbia R. Little Blackfoot River E. of ID34 bridge on N. end of Henry, E. of Blackfoot Reservoir. Elev. 6135'. Depth 6-30". Cold, swift-flowing small spring-fed river, with mud (rare) -gravel

substrate. Abundant macrophytes, including *Potamogeton pectinatus*, *Potamogeton crispus*, *Rorippa*, *Chara*; epiphytic algae rare. Abundant mollusks, including *Fluminicola "hindsi"*, and *Valvata humeralis*; no *Pyrgulopsis*. Collected by dip net. 6/12/1992 TF, EJ!

934. Little Blackfoot River at Enoch Valley Road. Zone 12: 463,520E 4,750,500N. NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 8, T6S R43E, Wayan West quad., Caribou Co., Idaho. Little Blackfoot R.-Blackfoot R.-Snake R.-Columbia R., Enoch Valley. Little Blackfoot River at Enoch Valley Road bridge (both sides), near its source, near N. end of Rasmussen Ridge, 22.7 mi. N. of Soda Springs. Elev. 6360'. Depth 2-6". Muddy river bottom; common *Myriophyllum*; small fish; cold; velocity slow. Very badly grazed. No mollusks. 6/12/1992 TF, EJ!

935. Enoch Valley spring. Zone 12: 463,520E 4,750,500N. NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 8, T6S R43E, Wayan West quad., Caribou Co., Idaho. Little Blackfoot R.-Blackfoot R.-Snake R.-Columbia R., Grays Range, Enoch Valley. Unnamed spring to E. of Enoch Valley Road at base of Rasmussen Ridge, 22.3 mi. N. of Soda Springs. Elev. 6320'. Spring now dry. No mollusks. 6/12/1992 TF, EJ!

936. Thomas Spring. Zone 12: 447,040E 4,665,990N. Unsurveyed; T15S R41E, Mink Creek quad., Franklin Co., Idaho. Cub R.-Bear R.-Great Salt Lk., Bear River Range. Thomas Spring on W. side of mouth of Sheep Dip Hollow, N. side of the Hillard Canyon Road (FS406), ca. 1.0 rd. mi. W. of Willow Flat Campground, Cache National Forest. Elev. 5960'. Mostly piped spring (drinking fountain). Destroyed by Utah Daughters of the Pioneers with Forest Service help. No mollusks present in remaining run. 6/8/1992 TF, EJ!

937. Unnamed spring west of Albert Moser Campground. Zone 12: 442,350E 4,665,050N. Projected NW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 8, T15S R41E, Mink Creek quad., Franklin Co., Idaho. Cub R.-Bear R.-Great Salt Lk., Bear River Range. Unnamed spring above (N. of) Warm Creek Canal, Cub River Road (FS406) and Cub River, W. of Albert Moser Campground, Cache National Forest. Elev. 5260'. Depth 2-6". Large cold spring with abundant *Rorippa*. Sand to boulder substrate. Partly capped and diverted to Warm Creek Canal. *Pyrgulopsis* locally abundant, but spotty. Medium-sized; disjunct aperture; tall, convex; good relaxation, but very few males. Collected by dip net, tray, and bucket. 6/8/1992 TF, EJ!

938. Hull Valley spring. Zone 12: 446,220E 4,667,980N. Unsurveyed; T14S R41E, Mink Creek quad., Franklin Co., Idaho. Carter Cr.-Cub R.-Bear R.-Great Salt Lk., Bear River Range, Hull Valley. Spring in Boy Scout camp above Carter Creek in Hull Valley, W. of FS407, inholding in Cache National Forest. Elev. 5950-5960'. Depth 1-13". Cold spring, very shallow (almost dry). Mud substrate. Almost completely capped and diverted to lake. No snails seen. 6/8/1992 TF, EJ!

939. Tilden Bridge spring 1. Zone 12: 376,820E 4,775,800N. NW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 30, T3S R34E, Rockford quad., Bingham Co., Idaho. Snake R.-Columbia R. Seep spring at boat launch (W. side) at Tilden Bridge Fishing Access off Ferry Butte Road, W. of Tilden Bridge, N. side of Snake River at RM 750.2. Elev. 4410'. Depth 0-1". Very shallow cold spring; gravel to cobble substrate; no macrophytes; just above river high water mark. Snails very rare (6); tall, small; could be *Lygryrus* n. sp. or *Pyrgulopsis*; poor relaxation; ? white body. Collected by hand. 5/14/1992 TF, EJ! Twenty specimens collected this time. Relaxation moderately successful: definitely *Lygryrus* n. sp.; resembles Cottonwood Creek morph. 6/27/1993 TF, EJ!

940. Birch Creek springs 1. Zone 12: 342,460E 4,899,620N. NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 35, T11N R29E, Blue Dome quad., Lemhi Co., Idaho. Birch Cr.-Snake R.-Columbia R., Birch Creek Valley. Small springs E. of ID28 and S. of Kaufman Guard Station, tributary to Birch Creek (on W. side). First springs S. of Guard Station. Elev. 6420'. Depth 0.5-10". Small sized cold springs;

*Rorippa* common; red algae at mouth; gravel to gravel and mud substrate. *Pyrgulopsis* n. sp. locally common. Did not relax well. Collected by dip net and tray. 10/18/1989 TF, EJ!

941. Birch Creek springs 2. Zone 12: 342,060E 4,899,200N. W $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 3, T10N R29E, Blue Dome quad., Clark Co., Idaho. Birch Cr.-Snake R.-Columbia R. Complex of 4 springs on W. side of canyon, W. tributary to Birch Creek and W. of ID28. Elev. 6400'. Depth 0-2". Cold springs; no mud substrate; no macrophytes; slow flow. Badly grazed; lymnaeids and physids only. Collected by dip net. 10/18/1989 TF, EJ!

942. Whiskey Springs. Zone 12: 272,320E 4,885,740N. NW $\frac{1}{4}$  & SW $\frac{1}{4}$  of SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 22, T9N R22E, Elkhorn Creek quad., Custer Co., Idaho. Thousand Springs Cr.-Big Lost R.-Snake R.-Columbia R., Thousand Springs Valley. Whiskey Springs (7-spring complex) SW of US93 Alternate, 1.7 mi. N. of ID75 jct., ca. 18.5 mi. NW of Mackay. Elev. 6280'. Depth 0-2". Seven cold springs; little vegetation; cobble (quartzite) substrate; moderate to slow velocity. Badly grazed formerly; essentially barren. No mollusks found. 6/11/1992 TF, EJ!

943. Gentile Valley springs 3. Zone 12: 436,470E 4,704,900N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 3, T11S R40E, Thatcher Hill quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gentile Valley. Unnamed spring run NE of Sant Road, 0.5 mi. N. of Fish Hatchery Road junction, E. of Bear River, about 9.2 mi. S. of Grace. Elev. 5080'. Depth 2-6". Cold spring with scattered *Rorippa* and few macrophytes. Badly grazed. No mollusks found. 6/8/1992 TF, EJ!

944. Gentile Valley springs 2. Zone 12: 436,350E 4,704,950N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 3, T11S R40E, Thatcher Hill quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gentile Valley. Unnamed spring N of Sant Road, 0.6 mi. N. of Fish Hatchery Road, E. of Bear River, about 9.1 mi. S. of Grace. Elev. 5040'. Dry spring. No mollusks present. 6/8/1992 TF, EJ!

945. Gentile Valley springs 1. Zone 12: 436,300E 4,704,900N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 3, T11S R40E, Thatcher Hill quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gentile Valley. Unnamed spring just N. of Sant Road, about 0.6 mi. N. of Fish Hatchery Road, E. of Bear River, about 9.1 mi. S. of Grace. Elev. 5040'. Spring now dry. No mollusks. Dry spring. 6/8/1992 TF, EJ!

946. Source spring for Grace State Fish Hatchery. Zone 12: 441,760E 4,702,680N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 7, T11S R41E, Thatcher quad., Caribou Co., Idaho. Whiskey Cr.-Bear R.-Great Salt Lk., Gentile. Unnamed source spring for Grace State Fish Hatchery (ID Fish and Game), W. most spring of three above and behind (N. of) the hatchery, SW of (below) Fish Hatchery Road, N. of Lago; source of Whiskey Creek. Elev. 5260'. Depth 4-32". Large cold clear spring with mud-travertine gravel substrate; moderate velocity; common *Rorippa* and *Potamogeton filiformis*; basalt talus at head. State of Idaho land. Partly diverted by adjacent (W.) farmer; partly covered by plastic tarps to exclude macrophytes. *Pyrgulopsis* large, moderate spire; good relaxation. Males common. Collected by dip net and bucket. 6/8/1992 TF, EJ!

947. Fourth spring west of Britton Spring. Zone 12: 442,380E 4,702,660N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 7, T11S R41E, Thatcher quad., Caribou Co., Idaho. Whiskey Cr.-Bear R.-Great Salt Lk., Gentile. Unnamed spring E. of Grace Hatchery and above (N. of) Fish Hatchery Road; W. most (of four) from Britton Spring, N. of Lago; source of tributary to Whiskey Creek. Elev. 5270'. Medium-sized cold spring issuing from basalt talus; *Rorippa*-covered; common *Urtica*. Spring almost dry. Channeled into irrigation system. 6/8/1992 TF, EJ!

948. Whiskey Creek east of ID34. Zone 12: 441,680E 4,701,060N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 18, T11S R41E, Thatcher quad., Caribou Co., Idaho. Whiskey Cr.-Bear R.-Great Salt Lk., Gentile. Whiskey Creek at bridge of gravel road below (S. of) Grace Hatchery, E. of ID34, N. of Lago. Elev. 5120'. Large creek with abundant macrophytes (*Rorippa*, *Potamogeton*); cold, slightly turbid;

moderate to high velocity; mud to gravel substrate. Probably Taylor T59-97 (Gregg 7887) SW NE sec. 18, T11S R41E. Had *Pyrgulopsis* in 1959-60. Pollution from fish hatchery. Low diversity fauna. Collected by dip net and bucket. 6/8/1992 TF, EJ!

949. Second spring west of Britton Spring. Zone 12: 442,640E 4,702,660N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 8, T11S R41E, Thatcher quad., Caribou Co., Idaho. Trout Cr.-Bear R.-Great Salt Lk., Gentile. Unnamed spring above Fish Hatchery Road, second spring of four W. of Britton Spring, E. of Grace Hatchery, N. of Lago. Elev. 5260'. Source in basalt talus. Largely dry spring; diverted into irrigation channel. Grazed. No mollusks found. 6/8/1992 TF, EJ!

950. Britton Spring. Zone 12: 443,000E 4,702,640N. NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 8, T11S R41E, Thatcher quad., Caribou Co., Idaho. Trout Cr.-Bear R.-Great Salt Lk., Gentile. Britton Spring above Fish Hatchery Road, E. of Grace Hatchery, N. of Lago. Elev. 5190'. Large cold spring from extensive basalt talus; mud-gravel substrate; abundant *Rorippa*; sizable open area; slow to moderate velocity. Partly diverted and modified. Relatively few snails (physids). Collected by dip net. 6/8/1992 TF, EJ!

951. Trout Creek tributary. Zone 12: 445,080E 4,703,280N. SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 9, T11S R41E, Thatcher quad., Caribou Co., Idaho. Trout Cr.-Bear R., Gentile. Unnamed spring run to E. of Bench-Lago Road on tributary to Trout Creek, NE of Lago. Elev. 5320'. Depth 2-8". Meadow, cold spring run with scattered *Rorippa*; cold; moderate velocity; substrate mud-cobbles. Badly grazed. *Lyogyrus* rare; relaxation poor. Hand collected. 6/8/1992 TF, EJ!

952. Trout Creek north of Lago. Zone 12: 442,500E 4,701,380N. NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 17, T11S R41E, Thatcher quad., Caribou Co., Idaho. Trout Cr.-Bear R., Gentile. Large tributary of Trout Creek at side road, N. of Bench-Lago Road, 1.1 mi. N. of Lago. Elev. 5100'. Fairly large spring-fed tributary; mud-gravel substrate; abundant macrophytes; moderate current. Probably Taylor T59-96 (Gregg 2886), NW $\frac{1}{4}$  NW $\frac{1}{4}$  17, T11S, R41E; formerly had *Pyrgulopsis*; somewhat polluted by agricultural runoff. Few snails. Collected by dip net. 6/8/1992 TF, EJ!

953. Trout Creek just south of Thatcher. Zone 12: 440,280E 4,695,160N. SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 1, T12S R40E, Thatcher quad., Franklin Co., Idaho. Trout Cr.-Bear R.-Great Salt Lk., Mound. Trout Creek at ID34 bridge (W. side), ca. 0.1 mi. S. of Thatcher, E. of Bear River. Elev. 4950'. Depth 1-4". Large creek; mostly mud bottom; abundant *Potamogeton pectinatus*; somewhat turbid; slow velocity. Obvious agricultural impact; no hydrobiids. Collected by dip net. 6/8/1992 TF, EJ!

954. Spring Creek. Zone 12: 441,310E 4,692,090N. SW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 18, T12S R41E, Thatcher quad., Franklin Co., Idaho. Spring Cr.-Bear R., Mound. Large spring run (Spring Creek) to E. of culvert on ID34 about 2.3 mi. S. of Thatcher. Elev. 4930'. Depth 2-16". Large cold spring run in pasture. Common *Rorippa*. Mud-cobble substrate. Badly impacted by cattle grazing. *Pyrgulopsis* quite large; common; few males; good relaxation. Collected by dip net and bucket. 6/8/1992 TF, EJ

955. Paris Spring. Zone 12: 458,870E 4,672,880N. NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 13, T14S R42E, Paris quad., Bear Lake Co., Idaho. Paris Cr.-Bear R.-Great Salt Lk., Wasatch Range. Paris Spring is approx. 0.2 mi. W. of Paris Campground up a trail, off the terminus of FS427, Cache National Forest. Elev. 6560'. Cold spring. High flow rate. Limestone talus slope. Substrate mostly limestone cobbles with local sand patches. No macrophytes in main flow; patches of *Rorippa* in quiet areas. Cache National Forest, administered by the Caribou National Forest. Diverted into channel to power plant below site. No mollusks seen. 9/6/1992 TF, EJ, SW!

956. Trail Canyon 1. Zone 12: 460,720E 4,727,990N. SE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 30, T8S R43E, Johnson Creek quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Aspen Range. Unnamed spring to N. of Trail Canyon Road (FS124) just below Columbia Basin/Great Basin Divide, upper Trail Canyon, 5.2 mi. E. of ID34, about 8.9 mi. E. of Soda Springs, Caribou National Forest. Elev. 6950'. Depth 0-2". Shallow, muddy spring in *Celtus* patch; no aquatic macrophytes; formerly good-sized cold spring. Sphaeriids only. Collected by dip net. Spring ditched; recent roadwork also damaging. Grazed. 6/11/1992 TF, EJ!

957. Trail Canyon 2. Zone 12: 449,400E 4,722,535N. NE<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 30, T8S R43E, Johnson Creek quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Aspen Range. Unnamed spring and arterial pond on Trail Canyon Road (FS124), upper Trail Canyon about 5.1 mi. E. of ID34, about 8.7 mi. E. of Soda Springs, near Columbia Basin/Great Basin divide, Caribou National Forest. Elev. 6940'. Depth 1-18". Cold spring; mud-gravel substrate. Eutrophic, spring essentially gone; now channeled into pond. Pond cold but turbid. Abundant macrophytes. Sphaeriids and physids only. Collected by dip net. 6/11/1992 TF, EJ!

958. Trail Canyon 3. Zone 12: 449,400E 4,722,535N. NE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 30, T8S R43E, Johnson Creek quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Aspen Range. Unnamed spring and artificial pond on S. side of Trail Canyon Road near quartzite spur, upper Trail Canyon, 5.0 mi. E. of ID34, 8.6 mi. E. of Soda Springs, near the Great Basin/Columbia River Divide, Caribou National Forest. Elev. 6900'. Depth 1-12". Muddy, essentially capped cold spring feeding stock pen. Mud substrate; pond mostly dry. Badly grazed and much modified; essentially destroyed. Collected to 12½ depth (pond) by dip net. 6/11/1992 TF, EJ!

959. Deer Creek 1. Zone 12: 413,480E 4,712,660N. Projected center NW<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> sec. 7, T10S R38E, Lava Hot Springs quad., Bannock Co., Idaho. Deer Cr.-Dempsey Cr.-Portneuf R.-Snake R.-Columbia R., Portneuf Range. Deer Creek below pond and S. of Smith Canyon Road, SW of Lava Hot Springs. Elev. 5780'. Depth 0-8". Small creek; grass-banked, muddy creek bed with local gravel patches. Cold, slow flow, turbid. Dip net collection. No mollusks found. 6/7/1992 TF, EJ!

960. Deer Creek 2. Zone 12: 413,200E 4,712,540N. Projected NE<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> sec. 7, T10S R38E, Lava Hot Springs quad., Bannock Co., Idaho. Deer Cr.-Dempsey Cr.-Portneuf R.-Snake R., Portneuf Range. Deer Creek run just above pond, on E. side of Smith Canyon Road, SW of Lava Hot Springs. Elev. 5820'. Depth 0-8". Small stepped creek, narrow muddy drainage with sand and gravel in pools; cold. Dip net collection. No snails. 6/7/1992 TF, EJ!

961. Deer Creek spring 1. Zone 12: 413,120E 4,712,170N. SE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 18, T10S R38E, Lava Hot Springs quad., Bannock Co., Idaho. Deer Cr.-Dempsey Cr.-Portneuf R.-Snake R., Portneuf Range. Very small (3' diameter) unnamed spring above Deer Creek on W. side and E. of Smith Canyon Road. Elev. 6060'. Depth 1". Very shallow vegetated cold seep spring; mostly moss- and grass-covered; muddy-sandy substrate. Spring not shown on USGS map. Bottom sample about 6 cm x 6 cm taken. *Lyogyrus* uncommon; poor relaxation. 6/7/1992 TF, EJ!

962. Smith Canyon spring 1. Zone 12: 412,460E 4,710,140N. NW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> sec. 19, T10S R38E, Lava Hot Springs quad., Bannock Co., Idaho. Portneuf R.-Snake R.-Columbia R., Portneuf Range. Small unnamed spring (poorly fenced) at the head of Smith Canyon; now cut off from main canyon; on N. side of Smith Canyon Road, SW of Lava Hot Springs. Elev. 6480'. Pool (spring-fed); former cold spring source. No macrophytes. Dip net collection. Physids and sphaeriids only; not retained. Spring grazed despite fence; highly modified. 6/8/1992 TF, EJ!

963. Yago Creek 2. Zone 12: 410,600E 4,706,070N. SE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 36, T10S R37E, Lava Hot Springs quad., Bannock Co., Idaho. Yago Cr.-Portneuf R.-Snake R.-Columbia R., Portneuf Range. Medium-sized cold creek N. of Virginia Road terminus at gate, NE of Downey. Elev. 5540'. Depth 1-3". Cold, spring-fed, medium-sized creek; moderate velocity; mud-gravel substrate; abundant *Rorippa* and some *Potamogeton filiformis*. Dead small hydrobiid shells in pool (could be *Lyogyrus* or small *Pyrgulopsis* sp.). Some freshly dead. Collected by hand and dip net. 6/8/1992 TF, EJ!

964. Beaverdam Creek spring 1. Zone 12: 417,740E 4,710,460N. SW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 22, T10S R38E, Lava Hot Springs quad., Bannock Co., Idaho. Beaverdam Cr.-Dempsey Cr.-Portneuf R.-Snake R., Portneuf Range. Unnamed medium-sized spring 0.1 mi. S. up tributary to Beaverdam Creek, about 1.1 rd. mi. E. up Beaverdam Creek access road from Dempsey Creek Road, S. of Lava Hot Springs. Elev. 6120'. Depth 2-12". Medium-sized cold spring with abundant *Rorippa*. Substrate mud-cobbles (quartzite); velocity medium. Beaver dams common. *Pyrgulopsis* (lg.) abundant; males common; good relaxation. Collected by dip net, tray, and bucket. *Oreohelix* common as dead shells. Hand collected. 6/9/1992 TF, EJ!

965. Spring southwest of Conda. Zone 12: 455,400E 4,729,940N. NW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 15, T8S R42E, Soda Springs quad., Caribou Co., Idaho. Soda Cr.-Bear R.-Great Salt Lk., Aspen Range. Small unnamed spring run in aspen stand draining to artificial lake about 0.7 mi. on dirt road E. of ID34 near base of hill, about 1.8 mi. SW of Conda. Elev. 6160'. Depth 4". Small cold spring run with watercress. Sandy bottom, less than 2' across; with abundant woody debris. Impacted by grazing. Adjacent spring (to E.) gone from agricultural impact. Dead shells common; small hydrobiid (could be *Lyogyrus*), sphaeriids, land snails including *Vertigo*. None definitely alive; some recent dead; may live in sediment; recollect needed. Collected by dip net. 6/12/1992 TF, EJ!

966. Hooper Spring. Zone 12: 450,680E 4,724,980N. NE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 6, T9S R42E, Soda Springs quad., Caribou Co., Idaho. Soda Cr.-Bear R.-Great Salt Lk., Aspen Range. Hooper Spring and run S. of Hooper Spring City Park, SW of Government Dam Road, SE of City of Soda Springs Power House No. 4, 1.5 mi. N. of Soda Springs. Elev. 5880'. Depth 1-2". CO<sub>2</sub> spring (cold) with abundant algae. Fe-rich. No snails found. Dip net collection attempted. 9/21/1991 TF, EJ!

967. Soda Creek in Hooper Spring City Park. Zone 12: 450,500E 4,725,140N. SW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> sec. 36, T8S R41E, Soda Springs quad., Caribou Co., Idaho. Soda Cr.-Bear R.-Great Salt Lk., Aspen Range. Soda Creek in Hooper Spring City Park, off Government Dam Road about 0.9 mi. W. of ID34, N. of Soda Springs. Elev. 5880'. Depth 2-14". Cold spring with swift flow; common *Potamogeton filiformis* and *Rorippa*; gravel-cobble substrate. Much agriculture runoff. *Physella* and *Ferrissia* only. Collected by hand and dip net. 9/21/1991 TF, EJ!

968. Soda Creek springs 1. Zone 12: 450,560E 4,725,160N. NE<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> sec. 36, T8S R41E, Soda Springs quad., Caribou Co., Idaho. Soda Cr.-Bear R.-Great Salt Lk., Aspen Range. Springs to W. and E. of Soda Creek, N. of Hooper Spring City Park, off Government Dam Road about 0.9 mi. W. of ID34, N. of Soda Springs. Elev. 5880'. Depth 1". Marshy area with *Typha*; modified springs with patches of *Rorippa* at center; mud substrate; negligible velocity, mostly dry. Modified for water supply and agricultural use to N. of spring sites. No mollusks found with dip net. 9/21/1991 TF, EJ!

969. Soda Creek springs 2. Zone 12: 451,355E 4,724,710N. NE<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 6, T9S R41E, Soda Springs quad., Caribou Co., Idaho. Soda Cr.-Bear R.-Great Salt Lk., Aspen Range. Unnamed spring just W. of Threemile Knoll Road, almost 0.2 mi. S. of Government Dam Road, N. of Soda Springs. Elev. 5840'. Small cold spring, some *Rorippa*; swift flow; mud-gravel

substrate. Mostly modified (old and new pipes, partly capped). No mollusks. Collection attempted by dip net. 9/21/1991 TF, EJ!

970. Ledger Creek 1. Zone 12: 453,245E 4,722,580N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 8, T9S R42E, Soda Springs quad., Caribou Co., Idaho. Ledger Cr.-Bear R.-Great Salt Lk., Aspen Range. Large spring-fed creek diverted into irrigation system below, locality at fence, about 0.2 up a dirt road off Wood Canyon Road, E. of Soda Springs just inside city boundary. Elev. 5890'. Depth 4-36". Large creek with abundant *Rorippa*, *Potamogeton filiformis*, hemlock, some *Chara*. Mud-cobble substrate (common travertine "gravel"), medium-fast velocity. Abundant *Pyrgulopsis*; 2 species (or one dimorphic?); one large and stout; second smaller and with disjunct aperture. Males very rare for both. Relaxation poor-moderate. Most snails with heavy calcareous algae coating. Dip net and tray and brush collections. 6/11/1992 TF, EJ! Abundant *Pyrgulopsis*; 2 species? (or dimorphic?); one large and stout; second smaller and with disjunct aperture. Males very rare for both. Most snails with heavy calcareous algae coating. Dip net and tray and brush collections. 9/5/1992 TF, EJ, SW!

971. Sulphur Canyon springs 1. Zone 12: 458,310E 4,721,060N. NE $\frac{1}{4}$  NW $\frac{1}{4}$  & NW $\frac{1}{4}$  NE $\frac{1}{4}$  of SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 14, T9S R42E, Soda Springs quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Aspen Range. Two unnamed springs E. of Sulphur Canyon Road (FS126), about 1.1 mi. N. of US30 in Sulphur Canyon, E. of Soda Springs. Elev. 6080'. Medium-sized cold springs, *Rorippa*-covered; moderate velocity; mud substrate. Grazed and modified (partly channeled). No hydrobiids; *Fossaria* and *Physella* only. Collected by dip net. 6/11/1992 TF, EJ!

972. Sulphur Canyon springs 2. Zone 12: 458,960E 4,721,170N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 13, T9S R42E, Soda Springs quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Aspen Range. Small unnamed spring to S. of Sulphur Canyon Road (FS126) at the mouth of South Sulphur Canyon, 1.7 mi. N. of US30, E. of Soda Springs. Elev. 6130'. Now grassy, only damp; muddy substrate; no flowing water from spring. Badly grazed, former cold spring. No snails found by hand or dip net. 6/11/1992 TF, EJ!

973. Sulphur Spring. Zone 12: 458,610E 4,721,480N. NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 13, T9S R42E, Soda Springs quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Aspen Range. Sulphur Spring (actually a spring complex) at the mouth of North Sulphur Canyon, on S. side of North Sulphur Canyon Road, ca. 0.3 mi. N. of Sulphur Canyon Road, 1.5 mi. N. of US30, E. of Soda Springs. Elev. 6120'. Depth 0-6". Cold springs, some with CO<sub>2</sub> and SO<sub>2</sub> gasses, sulphur sublimation, limestone substrate, mud-gravel, clear. Much modified by sulphur mining. *Fossaria* only. Collected by dip net. 6/11/1992 TF, EJ!

975. Big Spring Creek. Zone 12: 450,480E 4,721,780N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 12, T9S R41E, Soda Springs quad., Caribou Co., Idaho. Big Spring Cr.-Bear R. Big Spring Creek below outlet from Clear Springs Trout Hatchery, S. of Soda Springs. Elev. 5880'. Large spring-fed outlet; cold spring, very abundant *Potamogeton* and *Ceratophyllum*, some *Rorippa*, common epiphytic algae; moderate velocity; mud-gravel substrate. Rather warm and turbid. Polluted by Clear Springs Trout Hatchery operations to the west. No *Pyrgulopsis*. Collected by dip net. 9/21/1991 TF, EJ!

976. Unnamed springs at Soda Springs. Zone 12: 450,700E 4,722,220N. S $\frac{1}{2}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 7, T9S R42E, Soda Springs quad., Caribou Co., Idaho. Big Spring Cr.-Bear R.-Great Salt Lk. Two unnamed springs in center of Soda Springs, just S. of ID34/US30. Elev. 5780'. Moderate-sized spring run with abundant *Potamogeton filiformis* and other macrophytes; mostly mud substrate; moderate velocity. Nutrient-enriched? Springs not indicated on USGS map. Poor fauna; mostly physids. Collected by dip net. 9/11/1991 TF, EJ!

977. Ninety Percent Spring. Zone 12: 448,240E 4,725,740N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 35, T8S R41E, Alexander quad., Caribou Co., Idaho. Bear R.-Salt Lk., Ninety Percent Range. Ninety Percent Spring in Ninety Percent Canyon, below E. access road, NW of Soda Springs. Elev. 5760'. Depth 1-4". *Mimulus*, mostly grasses. Major cold spring with 4 outlets from basalt talus base; boggy in spots; minor *Rorippa*. Sizable flow, some surviving bog plants. No mollusks surviving. Collected by dip net. 6/11/1992 TF, EJ!

978. Spring at mouth of Ninety Percent Canyon. Zone 12: 448,730E 4,724,900N. NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 2, T9S R41E, Alexander quad., Caribou Co., Idaho. Bear R.-Salt Lk., Ninety Percent Range. Small unnamed spring in meadow to W. of Ninety Percent Spring Road at mouth of Ninety Percent Canyon, NW of Soda Springs. Elev. 5790'. Depth 0-6". Marshy small cold spring with narrow run, slow-moderate velocity; mud-sand substrate; *Scirpus* and scattered *Rorippa*. No mollusks found with dip net collecting. 9/21/1991 TF, EJ!

979. Spring on south side of Alexander Reservoir. Zone 12: 448,540E 4,721,590N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 14, T9S R41E, Alexander quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Bear River Range. Unnamed small spring S. of county road on S. side of Alexander Reservoir, SW of Soda Springs. Elev. 5720'. Small cold spring; little flowing water; mud with scattered cobbles; no vegetation. No mollusks found. 9/21/1991 TF, EJ!

980. Soda Creek south of ID34/US30 bridge. Zone 12: 449,400E 4,722,535N. NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 12, T9S R41E, Soda Springs quad., Caribou Co., Idaho. Bear R.-Great Salt Lk. Soda Creek just S. of ID34/US30 bridge, W. of Soda Springs. Elev. 5760'. Medium-sized agricultural-polluted cold creek channel, Fe-rich; moderate velocity; mud-gravel substrate. *Physella* only; too polluted. Collected by dip net. 9/22/1991 TF, EJ!

981. East Fork Mink Creek 1. Zone 12: 385,990E 4,732,660N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 8, T8S R35E, Clifton Creek quad., Bannock Co., Idaho. E. Fk. Mink Cr.-Mink Cr.-Portneuf R.-Snake R.-Columbia R., Bannock Range. Disturbed (partly culverted) spring at base of quartzite talus (metamorphic breccia), along FS001 0.2 mi. off Mink Creek Road (Bannock Highway=FS231) on N. side of road within 6' of road berm, S. of Pocatello, inholding in Caribou National Forest. Elev. 5030'. Shallow cold spring. Quartzite blocks. Little algae or macrophytes (scattered *Rorippa*). Spring mostly in concrete box. *Lyogyrus* sparse on quartzite. Snails under several inches of rock (not near surface or in light); uncommon ; poor relaxation. Hand collected. 7/7/1992 TF, EJ!

982. Corral Spring Run. Zone 12: 383,910E 4,728,220N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 25, T8S R34E, Clifton Creek quad., Bannock Co., Idaho. S. Fk. Mink Cr.-Mink Cr.-Portneuf R.-Snake R.-Columbia R., Bannock Range. Spring run from Corral Spring about 0.4 mi. W. of source spring, just E. of (above) FS163, 1.0 mi. S. of Mink Creek Road (Bannock Highway=FS231), South Fork Mink Creek, Caribou National Forest. Elev. 5480'. Depth 1-2". Cold, narrow spring run, shallow, pastured, few macrophytes (scattered *Rorippa*). Bottom with travertine pebbles and partial moss cover. Abundant spring deposits at mouth, probably dug out. Spring pastured at mouth. Snails sparse. Large *Pyrgulopsis*; only collected females; rare *Lyogyrus*; relaxation good. Dip net & tray, hand collections. 7/7/1992 TF, EJ!

983. Pass Creek spring 1. Zone 12: 303,820E 4,870,220N. Projected NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 2, T7N R25E, Methodist Creek quad., Custer Co., Idaho. Pass Cr.-Lost R.-Snake R.-Columbia R., Lost River Mts. Unnamed small spring on W. side of Pass Creek Road (FS122), S. of Cave Gulch about 0.3 mi., Challis National Forest. Elev. 6480'. Depth 0-2". Limestone talus with cold spring run; no aquatic macrophytes. Spring modified by road building. No mollusks found. 6/6/1992 TF, EJ!

984. Spring tributary to Methodist Creek. Zone 12: 303,707E 4,872,120N. Projected W $\frac{1}{2}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 35, T8N R25E, Methodist Creek quad., Custer Co., Idaho. Pass Cr.-Lost R.-Snake R.-Columbia R., Lost River Mts. Spring run tributary to Methodist Creek (N. side) below Mountain View Guard Station, S. of FS429, E. of Pass Creek Road (FS122), Challis National Forest. Elev. 6640'. Depth 1-2". Cold spring run, mud substrate; no aquatic macrophytes. Collected by dip net. Sphaeriids and physids. 6/6/1992 TF, EJ!
985. Blue Jay Canyon. Zone 12: 303,840E 4,869,220N. NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 11, T7N R25E, Methodist Creek 1969 quad., Custer Co., Idaho. Pass Cr.-Lost R.-Snake R.-Columbia R., Lost River Mts. Shallow limestone talus on W. side of Pass Creek Road (FS122), just S. of mouth of Blue Jay Canyon, Challis National Forest. Elev. 6440'. Grassy limestone talus base with scattered *Celtus* and *Rosa*. 10/07/1990 TF, EJ! Snails uncommon; mostly subadults; *Oreohelix* n. sp. cf. "peripherica". 10/25/1990 TF, EJ! Snails uncommon; mostly subadults; *Oreohelix* n. sp. cf. "peripherica". 06/06/1992 TF, EJ!
986. Meadow Creek 1. Zone 12: 457,990E 4,752,340N. SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 3, T6S R42E, Henry 1981 quad., Caribou Co., Idaho. Meadow Cr.-Blackfoot R.-Snake R.-Columbia R. Meadow Creek to E. of N. Blackfoot Reservoir access road 0.5 mi. off ID34, NE of Henry. Elev. 6200'. Rather warm creek, mixed sand-gravel-cobbles substrate with *Myriophyllum* and *Potamogeton pectinatus*. Moderate velocity. Common sphaeriids, *Fluminicola "hindsi"*, *Physella*, *Gyraulus parvus*. Dip net and hand collection. 06/12/1992 TF, EJ!
987. Chubb Springs (North). Zone 12: 458,900E 4,760,190N. SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 11, T5S R42E, Henry quad., Caribou Co., Idaho. Meadow Cr.-Blackfoot R.-Snake R.-Columbia R., Chubb Flat. Spring at base of basalt talus below ID34, E. side of Chubb Flat. Elev. 6240'. Depth 1-18". Shallow cold spring pool with abundant *Myriophyllum*, filamentous algae, *Mimulus*. *Physella*, abundant *Fluminicola "hindsi"*, large *Valvata humeralis*. Collected by dip net. Moderate grazing impact. 6/12/1992 TF, EJ!
988. Chubb Springs (South). Zone 12: 458,820E 4,759,930N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 11, T5S R42E, Henry quad., Caribou Co., Idaho. Meadow Cr.-Blackfoot R.-Snake R.-Columbia R., Chubb Flat. Shallow rocky spring at base of basalt talus, S. side of Chubb Flat, below ID34. Elev. 6240'. Shallow rocky cold spring run with rare filamentous algae, cobble substrate. *Fluminicola "hindsi"* common locally. Heavy grazing impact. 6/12/1992 TF, EJ!
989. Lion Creek spring. Zone 12: 302,920E 4,874,100N. projected SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 23, T8N R25E, Methodist Creek quad., Custer Co., Idaho. Pass Cr.-Lost R.-Snake R.-Columbia R., Lost River Range. Unnamed spring in gulch of Lion Creek, about 0.2 mi. W. of Pass Creek Road (FS122), Challis National Forest. Elev. 6990'. Small cold spring in creek bottom; mud-cobble substrate; no macrophytes. Dip net collection attempted, no snails found. 6/6/1992 TF, EJ!
990. Pass Creek. Zone 12: 303,740E 4,867,560N. SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 14, T7N R25E, Methodist Creek 1969 quad., Custer Co., Idaho. Pass Cr.-Lost R.-Snake R.-Columbia R., Lost River Range. N.-facing limestone talus, below bluff and knob to W. of Pass Creek Road (FS122), Challis National Forest. Elev. 6400'. Open grassy area; talus with little loose rock and considerable soil; scattered *Artemesia*, *Celtus*.
991. Preston North Stake Campground spring. Zone 12: 434,680E 4,687,760N. NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 33, T12S R40E, Treasureton quad., Franklin Co., Idaho. Cottonwood Cr.-Bear R.-Great Salt Lk., Portneuf Range. Unnamed small spring on S. side of Cottonwood Creek, 2.0 mi. off ID34; W. side of creek in S. end of Preston North Stake Camp Ground. Elev. 5360'. Depth 0-2". Cold spring, muddy at source; mud, sand, and cobbles near junction with Cottonwood Creek;

*Myriophyllum* at source; scattered *Rorippa* below. Open and grassy near source, Ranunculaceae common in this area; *Pinus ponderosa* riparian forest below. Not marked on USGS map. *Lyogyrus* abundant locally, particularly in muddy pools below source and before cobble areas. Heavily damaged by cattle grazing near source. Dip net collected. May be Taylor T59-99 & Gregg 7896 (NW $\frac{1}{4}$  sec. 33, T12S R40E). 6/8/1992 TF, EJ!

992. Birch Creek springs 3. Zone 12: 342,460E 4,899,620N. SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 35, T11N R29E, Blue Dome quad., Lemhi Co., Idaho. Birch Cr.-Snake R.-Columbia R., Birch Creek Valley. Large unnamed spring just E. and S. of Kaufman Guard Station, ca. 0.25 mi. E. of ID28, W. of Birch Creek. Elev. 6400'. Depth 4-16". Large cold spring with sand, gravel, and cobble substrate; cobbles with red algae; *Rorippa* and *Veronica* abundant; common *Potamogeton filiformis* locally. Abundant *Pyrgulopsis* n. sp. and *Stagnicola hinkleyi*. Dip net and brush and tray collections. 6/20/1993 TF, EJ!

993. Birch Creek springs 4. Zone 12: 342,425E 4,899,550N. S $\frac{1}{2}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 2, T10N R29E, Blue Dome quad., Lemhi Co., Idaho. Birch Cr.-Snake R.-Columbia R., Birch Creek Valley. Second unnamed spring S. of Kaufman Guard Station and just W. of Birch Creek, ca. 0.4 rd. mi. from ID28. Elev. 6400'. Depth 0-4". Small cold spring and run, *Rorippa*-covered; cobble substrate (limestone and quartzite). Abundant *Pyrgulopsis* n. sp. Dip net and brush and tray collections. 6/20/1993 TF, EJ!

994. Teton River west of Buxton Bridge. Zone 12: 484,890E 4,840,940N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 31, T5N R45N, Bates quad., Teton Co., Idaho. Teton R.-Henry's Fk.-Snake R.-Columbia R., Teton Basin. Public access to Teton River about 0.1 mi. W. of Buxton Bridge, N. side of Teton River at RM 61.4. Elev. 6000'. Strongly spring-fed river with local dense beds of *Chara*, *Myriophyllum*, and *Ceratophyllum*; some *Potamogeton filiformis* very locally; swift current with sand and mud beds, local red basalt gravel and cobbles. Common *Pyrgulopsis*, both on rocks and substrate and on macrophytes. Less common *Fluminicola "hindsi"*, *Physella*, sphaeriids. Dip net collection. 9/21/1991 TF, EJ!

995. Teton River at Bates Bridge. Zone 12: 486,740E 4,837,980N. NW $\frac{1}{4}$  & SW $\frac{1}{4}$  of SW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 5, T4N R45E, Bates quad., Teton Co., Idaho. Teton R.-Henry's Fk.-Snake R.-Columbia R., Teton Basin. Both sides of Bates Bridge on Teton River at RM 64.0. Elev. 6000'. Strongly spring-fed river with local dense beds of *Ceratophyllum* and *Potamogeton filiformis*; local *Myriophyllum* and rare *Chara*; swift current with mud, silt, and sand beds, local fine gravel; some large debris from former bridge pilings. Common *Pyrgulopsis*, *Fluminicola "hindsi"*, large sphaeriids; less common *Physella*, *Stagnicola*. Dip net collection. 9/21/1991 TF, EJ!

996. Teton River at White Bridge. Zone 12: 486,000E 4,831,680N. N $\frac{1}{2}$  of NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 29, T4N R45E, Bates quad., Teton Co., Idaho. Teton R.-Henry's Fk.-Snake R.-Columbia R., Teton Basin. Teton River at White Bridge. Elev. 6000'. Spring-fed river with local dense beds of *Ceratophyllum*; some *Potamogeton filiformis* very locally; swift current with mud, silt, sand, and fine gravel; some basalt rip-rap locally. No hydrobiids. Uncommon *Radix*, *Lymnaea stagnalis*, *Physella*, sphaeriids, *Fluminicola "hindsi"*. 9/21/1991 TF, EJ!

997. Paradise Creek. Zone 12: 484,640E 4,832,660N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 30, T4N R44E, Bates quad., Teton Co., Idaho. Paradise Cr.-Teton R.-Henry's Fk.-Snake R.-Columbia R., Teton Basin. Paradise Creek on W. side of Victor-Cedron-Bates Road, ca. 0.75 mi. W. and 0.6 mi. N. of White Bridge. Elev. 6060'. Large, swift spring-fed creek; abundant *Rorippa*, *Potamogeton filiformis*; common trout, leeches. Gravel-cobble substrate with local sand and mud patches. Common large *Pyrgulopsis*; *Physella*; *Stagnicola*; sphaeriids. Dip net collected. 9/21/1991 TF, EJ!

1105. Indian Springs 1. Zone 12: 346,740E 4,731,830N. SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 18, T8S R31E, Indian Springs quad., Power Co., Idaho. Warm Cr.-Cold Cr.-Snake R.-Columbia R., Deep Creek Mts. Indian Springs W. -most spring run of N.-most pair, N. of Indian Springs Resort pool. Narrow warm spring below concrete capture structure. Elev. 4520'. Depth 0.5-4.5". Warm, clear spring with mineralized sand-pebble substrate, calcareous alga crust, brightly-colored algal coating. Hydrobiids common (small black *amargosa*-like *Pyrgulopsis*); some introduced *Tarebia* and *Planorbella duryi*. Hand and dip net collections. 5/2/1992 TF, EJ!

1106. Indian Springs 2. Zone 12: 346,740E 4,731,780N. SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 18, T8S R31E, Indian Springs quad., Power Co., Idaho. Warm Cr.-Cold Cr.-Snake R.-Columbia R., Deep Creek Mts. Indian Springs, muddy warm spring runs small pool, N. of Indian Springs Resort pool and S. of N.-most group. Elev. 4520'. Depth 0.5-18". Warm spring pool and run; mud substrate in pool; calcareous substrate in run. Tropical fish; tropical *Planorbella*; no hydrobiids. Hand and dip net collections. 5/2/1992 TF, EJ!

1130. Spring Creek East of Springdale. Zone 12: 279,860E 4,710,300N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 32, T10S R24E, Rupert quad., Cassia Co., Idaho. Spring Cr.-Snake R.-Columbia R. Spring Creek between ID81 and U.P.R.R. track, ca. 0.3 mi. E. of Springdale, S. of the Snake River. Elev. 4145'. Depth 1-48". Large cold spring-fed creek; silt to gravel substrate; abundant *Rorippa*; only central channel open; deep, swift flow. Seems nutrient-enriched; relatively small fauna with rare *Fluminicola "hindsii"* and more common *Physella*, sphaeriids. Creek possibly dredged. Dip net collection. 9/25/1992 TF, EJ!

1131. Unnamed Spring east of Clear Lakes Grade. Zone 11: 683,700E 472,700N. Projected SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 1, T9S R14E, Thousand Springs quad., Gooding Co., Idaho. Snake R.-Columbia R. Unnamed spring east of Clear Lakes Grade. Spring flowing from basalt talus-covered cliff on the N. side of Snake River, vicinity of Empire Rapids. W. spring of 2 springs examined draining into a irrigation channel. Elev. 3020'. Depth 1-12". Cold spring flowing from basalt talus. Channel with mud bottom with scattered basalt cobbles. *Rorippa* present in small clumps. Spring not shown on USGS map. . Hand and dip net collections. Common live *Fluminicola "hindsii"*; uncommon *Potamopyrgus antipodarum*. 05/05/1993 TF, EJ!

1132. Unnamed Spring east of Clear Lakes Grade. Zone 11: 683,840E 472,700N. Projected SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 1, T9S R14E, Thousand Springs quad., Gooding Co., Idaho. Snake R.-Columbia R. Unnamed spring east of Clear Lakes Grade. Spring flowing from below a basalt cliff on the N. side of Snake River, vicinity of Empire Rapids. E. spring of 2 springs examined draining into a irrigation channel. Elev. 3020'. Depth 1-5". Cold spring. Mud-sand channel bottom with scattered basalt cobbles. Channel covered by dense *Rorippa*. Spring not shown on USGS map. Visual inspection, dip net collection attempted. No mollusks found. 05/05/1993 TF, EJ!

1133. Irrigation channel east of Clear Lakes Grade. Zone 11: 683,780E 472,698N. Projected NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 1, T9S R14E, Thousand Springs quad., Gooding Co., Idaho. Snake R.-Columbia R. Irrigation channel at intake pipestand, east of Clear Lakes Grade on the N. side of Snake River, vicinity of Empire Rapids. Elev. 3000'. Depth 1-13". Spring-influenced irrigation channel with mud-sand bottom. No macrophytes present. Irrigation channel not shown on USGS map. . Hand and dip net collections. Shells of an introduced land snail (*Helix aspersa*) collected along the irrigation channel; first known occurrence in the state. 05/05/1993 TF, EJ!

1134. North side of Snake River above Empire Rapids. Zone 11: 683,840E 4,726,790N. Projected SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 1, T9S R14E, Thousand Springs quad., Gooding Co., Idaho. Snake R.-Columbia R. Pool at spring outfall, N. side of Snake River above Empire Rapids, RM 594.34. Elev. 2935'. Depth 1-4'. Pool with an anoxic mud bottom, subsurface sand-gravel, travertine. Few *Potamogeton crispus* and *Elodea* offshore; common *Cladophora* on surface.

Samples collected at spring outfall and about 100' down river. Dipnet samples examined 50' upriver from outfall. Outfall has eroded the river bottom exposing older deposits. Long dead *Valvata utahensis*. Numerous *Anodonta californiensis* shells on beach and offshore; one live specimen found. *Potamopyrgus antipodarum* rare; other snails found dead only. Cold-water biota seems to be mostly extinct in this area; common long-dead *Fluminicola "hindsi"*. 05/05/1993 TF, EJ!

1135. Snake River on north side of Downard Bridge. Zone 12: 284,560E 4,717,420N. NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert SE quad., Cassia Co., Idaho. Snake R.-Columbia R. E. side of the Snake River about 210' from E. shore, N. of Downard Bridge (ID25) at RM 663.91. Elev. 4143'. Depth 0.6-1 m. Shallow sandy bottom. Macrophytes (*Elodea*) and epiphytic algae (*Pithopora*) mostly dead. Common chironomids. Long-dead *Valvata utahensis* found. Four replicates collected by PONAR dredge from boat. Live mollusks not abundant. Common long-dead *Fluminicola "hindsi"*. 5/6/1993 TF, EJ!

1136. Snake River on the north side of Downard Bridge. Zone 12: 284,550E 4,717,410N. NW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert quad., Cassia Co., Idaho. Snake R.-Columbia R. Center of the Snake River, about 420' from E. shore, N. of Downard Bridge (ID25) at RM 663.92. Elev. 4143'. Depth 1 m. Bottom a mix of sand and gravel with local subsurface clay. *Pithopora* present but very rare. Four replicates taken with PONAR dredge from a boat. Long dead *Valvata utahensis* found. Live *Sphaerium* and *Pisidium* present; common recently dead *Ferrissia*. 5/6/1993 TF, EJ!

1137. Snake River on the north side of Downard Bridge. Zone 12: 284,540E 4,717,530N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert quad., Minidoka Co., Idaho. Snake R.-Columbia R. W. side of the Snake River about 270' from W. shore, N. of Downard Bridge (ID25) at RM 663.93. Elev. 4143'. Depth 1.75 m. Bottom a mix of 50% mud-silt and 50% sand-gravel. Macrophytes very rare. Four replicates collected by PONAR dredge from a boat. Abundant chironomids. Mollusks mostly dead. Common long-dead *Fluminicola "hindsi"*, common recently-dead *Ferrissia*. Long dead *Valvata utahensis* found. 5/6/1993 TF, EJ!

1138. Snake River on the north side of Downard Bridge. Zone 12: 284,490E 4,717,580N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert quad., Minidoka Co., Idaho. Snake R.-Columbia R. W. side of the Snake River about 190' from W. shore, N. of Downard Bridge (ID25) at RM 663.95. Elev. 4143'. Depth 2 m. Substrate mostly mud-sand with medium gravel. *Pithopora* present. Four replicates collected by PONAR dredge from a boat. Common chironomids present. Long-dead *Valvata utahensis* found. Common long-dead *Fluminicola "hindsi"*, recently-dead *Ferrissia*, and live *Pisidium*. 5/6/1993 TF, EJ!

1139. Snake River on the north side of Downard Bridge. Zone 12: 284,610E 4,717,340N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert SE quad., Cassia Co., Idaho. Snake R.-Columbia R. About 100' transect out from E. shore of the Snake River, 30' N. of Downard Bridge (ID25) at RM 663.90. Elev. 4143'. Depth 0.8 m. Mud-silt river bottom. Dip net collections. Few live sphaeriids; common recently-dead *Gyraulus parvus*, *Ferrissia*, and sphaeriids; long dead *Valvata utahensis*, *Fluminicola "hindsi"*. 5/6/1993 TF, EJ!

1140. Snake River on the north side of Downard Bridge. Zone 12: 284,620E 4,717,420N. SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert SE quad., Cassia Co., Idaho. Snake R.-Columbia R. About 100' transect out from E. shore of the Snake River, 100' N. of Downard Bridge (ID25) at RM 663.90. Elev. 4143'. Depth 0.8 m. River with mud-silt substrate, locally anoxic. Dip net collections. Common recently-dead *Gyraulus parvus*, live sphaeriids, chironomids and long-dead *Valvata utahensis*. 5/6/1993 TF, EJ!

1141. Snake River on the north side of Downard Bridge. Zone 12: 284,680E 4,717,460N. Center NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert SE quad., Cassia Co., Idaho. Snake R.-Columbia R. About 100' transect out from E. shore of the Snake River, 250' N. of Downard Bridge (ID25) at RM 664.0. Elev. 4143'. Depth 0.8 m. River bottom with sand and silt. Rare *Potamogeton filiformis*; common filamentous algae on bottom. Dip net collections. Few sphaeriids; rare snails. Common long-dead *Fluminicola "hindsi"*, one long-dead *Fisherola nuttalli*. Long-dead *Valvata utahensis* also. 5/6/1993 TF, EJ!

1142. Snake River on the north side of Downard Bridge. Zone 12: 284,680E 4,717,380N. NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert SE quad., Cassia Co., Idaho. Snake R.-Columbia R. E. shore of the Snake River, 150' N. of Downard Bridge (ID25) at RM 663.90. Elev. 4143'. Beach along river. Hand-collected beach drift, mostly physids. 5/6/1993 TF, EJ!

1143. Snake River on the north side of Downard Bridge. Zone 12: 284,700E 4,717,400N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert SE quad., Cassia Co., Idaho. Snake R.-Columbia R. E. shore of the Snake River, 350' N. of Downard Bridge (ID25) at about RM 664.1. Elev. 4143'. Depth 0.8 m. Silt-sand river bottom. Rare *Potamogeton filiformis*; common filamentous algae on bottom. Long-dead *Valvata utahensis*; common long-dead *Fluminicola "hindsi"*; common recently-dead *Gyraulus parvus*, physids, *Pisidium*. Dip net collection. 5/6/1993 TF, EJ!

1144. Snake River on the north side of Downard Bridge. Zone 12: 284,480E 4,717,600N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert quad., Minidoka Co., Idaho. Snake R.-Columbia R. W. shore of the Snake River at a spring seep, 200' N. of Downard Bridge (ID25) at RM 663.90. Elev. 4143'. Depth 1.0-3 cm. Cold spring seep with abundant *Rorippa*. Abundant *Oxyloma haydeni* on *Rorippa*, collected by hand. Dip net collection of the spring attempted. *Stagnicola caperata* common. 5/6/1993 TF, EJ!

1145. Snake River on the north side of Downard Bridge. Zone 12: 284,520E 4,717,620N. NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert quad., Minidoka Co., Idaho. Snake R.-Columbia R. Transect out 15' from W. shore of the Snake River in proposed bridge right-of-way, about 250' N. of Downard Bridge (ID25) at RM 664.0. Elev. 4143'. Depth 1 m. Sand-silt river bottom. Rare *Ceratophyllum* present. Live *Vorticifex effusa* collected. Common long-dead *Fluminicola "hindsi"*, rarer *Valvata utahensis*; common recently-dead *Pisidium*. Dip net collections. 5/6/1993 TF, EJ!

1146. Snake River on the north side of Downard Bridge. Zone 12: 284,540E 4,717,690N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert quad., Minidoka Co., Idaho. Snake R.-Columbia R. Transect out 15' from W. shore of the Snake River on the N. side of the proposed bridge right-of-way, about 350' N. of Downard Bridge (ID25) at RM 664.3. Elev. 4143'. Depth 1 m. River with mud substrate with large amounts of plant debris present. Dip net collection. Common recently-dead physids, *Pisidium*; long-dead *Valvata utahensis*. 5/6/1993 TF, EJ!

1147. Snake River on the north side of Downard Bridge. Zone 12: 284,460E 4,717,550N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert quad., Minidoka Co., Idaho. Snake R.-Columbia R. Transect out 15' from W. shore of the Snake River, about 150' N. of Downard Bridge (ID25) at RM 663.8. Elev. 4143'. Depth 1 m. River with mud-gravel bottom with large amounts of plant debris present. Sizable amounts of filamentous algae and rooted macrophytes (*Potamogeton*, *Elodea*, *Ceratophyllum*). Dip net collections. Rare *Potamopyrgus antipodarum*, long-dead *Fluminicola "hindsi"* and *Valvata utahensis*. *Gonidea angulata* fragments. 5/6/1993 TF, EJ!

1148. Snake River on the east side of Overland Bridge. Zone 12: 270,820E 4,715,010N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 17, T10S R28E, Burley SE quad., Minidoka Co., Idaho. Snake R.-Columbia R. Six spans out from the N. shore of the Snake River, E. side of Overland Bridge (ID27) at Burley, RM 651.70. Elev. 4143'. Depth 3.6 m. River with heavy gravel substrate. No macrophytes present. Few mollusks in any condition; long-dead *Sphaerium simile*, recently-dead *Gonidea angulata*. Two replicates collected with PONAR dredge from a boat. 5/7/1993 TF, EJ!

1149. Snake River on the east side of Overland Bridge. Zone 12: 270,800E 4,714,940N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 17, T10S R23E, Burley SE quad., Cassia Co., Idaho. Snake R.-Columbia R. Six spans out from the S. shore of the Snake River, E. side of Overland Bridge (ID27) at Burley, RM 561.70. Elev. 4143'. Depth 3.5 m. Sand-gravel river bottom. No macrophytes present. Three replicates collected by PONAR dredge from a boat. Few mollusks present in any condition; live *Pisidium compressum* most common; long-dead *Fluminicola Thindsi*. 5/7/1993 TF, EJ!

1150. Snake River on the west side of Overland Bridge. Zone 12: 270,720E 4,714,940N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 17, T10S R23E, Burley SE quad., Cassia Co., Idaho. Snake R.-Columbia R. Two spans out from the S. shore of the Snake River, W. side of Overland Bridge (ID27) at Burley, RM 651.64. Elev. 4143'. Depth 2 m. River with silt-mud substrate. Two replicates collected with PONAR dredge off of a boat. Mollusks in any condition rare in sample. 5/7/1993 TF, EJ!

1151. Snake River on the west side of Overland Bridge. Zone 12: 270,720E 4,715,040N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 17, T10S R23E, Burley SE quad., Minidoka Co., Idaho. Snake R.-Columbia R. Two spans out from the N. shore of the Snake River, W. side of Overland Bridge (ID27) at Burley, RM 561.64. Elev. 4143'. Depth 3 m. Mud-silt river bottom. Abundant plant debris. Three replicates collected by PONAR dredge from a boat. Live sphaeriids (*Pisidium compressum*) and a few dead lymnaeids seen, all rare. 5/7/1993 TF, EJ!

1152. Snake River on the north side of Downard Bridge. Zone 12: 284,490E 4,717,600N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T10S R24E, Rupert quad., Minidoka Co., Idaho. Snake R.-Columbia R. Transect out 20' from W. shore of the Snake River at a spring seep, 200' N. of Downard Bridge (ID25) at RM 663.90. Elev. 4143'. Depth 1 m. Gravel-silt river bottom, near cold spring seep. Abundant *Potamogeton filiformis*; *Rorippa* abundant along shore in spring seep. Spring not shown on USGS map. Dip net collected. Single live and one long-dead *Valvata utahensis* found at this site. Live *Stagnicola caperata* most common; long-dead *Fluminicola* also frequent. 5/6/1993 TF, EJ!

1165. Michaud Creek spring 1. Zone 12: 376,380E 4,741,220N. NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 17, T7S R34E, Michaud Creek quad., Bannock Co., Idaho. Michaud Cr.-Snake R.-Columbia R., Bannock Range. Unnamed spring along E. side of Michaud Creek, ca. 0.5 mi. from Michaud Creek Road (FS007). Elev. 5920'. Depth 0-6". *Rorippa* in unnamed cold spring; creek mostly quartzite gravel-cobble substrate, some *Rorippa* patches. Spring not shown on USGS map. *Lyogyrus* rare in creek; moderately common in *Rorippa*-covered spring on E. side. Area pastured; some impact; mining prospect nearby. Dip net and tray collection. 6/21/1993 TF, EJ!

1166. Michaud Creek 1. Zone 12: 375,750E 4,741,500N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 18, T7S R34E, Michaud Creek quad., Power Co., Idaho. Michaud Cr.-Snake R.-Columbia R., Bannock Range. Michaud Creek where Michaud Creek Road (FS007) goes up a tributary canyon, Caribou National Forest. Elev. 5720'. Depth 1-4'. Quartzite cobble substrate; cold creek, very few macrophytes (*Rorippa*) present. Creek cattle-trampled. No mollusks found. 6/21/1993 TF, EJ!

1167. South Michaud Creek tributary 1. Zone 12: 375,470E 4,741,360N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 18, T7S R34E, Michaud Creek quad., Power Co., Idaho. Michaud Cr.-Snake R.-Columbia R., Bannock Range. S. unnamed tributary creek of Michaud Creek, off (S.) of Michaud Creek Road (FS007), just over 0.1 mi. on dirt road. Elev. 5640'. Depth 1-4'. Quartzite cobble bottomed creek. Area with snails has *Rorippa* clumps and spring seeps along W. bank. *Lyogyrus* not common. None found surviving above or below the site. Surviving site fortuitously protected from grazing. Cattle-impacted site. Dip net and hand collections. 6/21/1993 TF, EJ!
1168. South Michaud Creek tributary 2. Zone 12: 375,470E 4,741,100N. SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 18, T7S R34E, Michaud Creek quad., Power Co., Idaho. Michaud Cr.-Snake R.-Columbia R., Bannock Range. S. unnamed tributary creek of Michaud Creek, off (S.) of Michaud Creek Road (FS007), ca. 0.2 mi. on dirt road. Elev. 5680'. Depth 1-4". Mud-cobble (quartzite) bottomed creek. No macrophytes. No mollusks found. Hand and dip net collections attempted. 6/21/1993 TF, EJ!
1169. Trail Creek spring 1. Zone 12: 376,760E 4,745,820N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 32, T6S R34E, Michaud Creek quad., Power Co., Idaho. Trail Cr.-Portneuf R.-Snake R.-Columbia R., Bannock Range. Unnamed spring in a tributary canyon to Trail Creek (N. side), N. of Trail Creek Road about 3.9 mi. W. of Pocatello (City Hall). Elev. 5320'. Spring completely piped and now dry. No mollusks. 6/21/1993 TF, EJ!
1170. Birch Creek at Robin Road. Zone 12: 398,190E 4,717,900N. SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 34, T9S R36E, Arimo quad., Bannock Co., Idaho. Birch Cr.-Marsh Cr.-Portneuf R.-Snake R.-Columbia R., Bannock Range, Marsh Valley. Birch Creek collected W. of Robin Road and N. of Preslar Road, over 4.0 mi. SW of McCammon, W. of I-15, 1.8 rd. mi. N. of Robin, E. side of Bannock Range. Elev. 4740'. Depth 0-18". Modified large spring-fed creek pool with *Veronica*; *Potamogeton filiformis*; mostly mud-fine gravel substrate; local *Rorippa*. Agricultural runoff (nutrient-enriched); almost no snails; rare sphaeriids not collected. Dip net and hand collections. 6/22/1993 TF, EJ!
1171. Ellis Creek at Robin Road. Zone 12: 397,980E 4,717,520N. NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 33, T9S R36E, Arimo quad., Bannock Co., Idaho. Ellis Cr.-Birch Cr.-Marsh Cr.-Portneuf R.-Snake R.-Columbia R., Bannock Range, Marsh Valley. Ellis Creek sampled E. Robin Road, little-less than 0.3 rd. mi. from Preslar Road, 1.4 mi. N. of Robin. Elev. 4780'. Depth 2-18". Spring-fed small creek (modified spring run), swift and cold; no macrophytes; sand-gravel substrate. No snails seen. Dip net collection attempted. 6/22/1993 TF, EJ!
1172. Birch Creek spring 1. Zone 12: 398,140E 4,717,020N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 33, T9S R36E, Arimo quad., Bannock Co., Idaho. Birch Cr.-Marsh Cr.-Portneuf R.-Snake R.-Columbia R., Bannock Range, Marsh Valley. Unnamed spring tributary to Birch Creek (W. side) W. of Robin Road and 0.1 mi. N. of Preslar Road junction, over 5.0 mi. SW of McCammon, 1.9 mi. N. of Robin. Elev. 4740'. Depth 1-6". Shallow and narrow impacted (grazing) cold spring run with sand-fine gravel substrate; patchy *Rorippa*. *Pyrgulopsis* n. sp. rather rare; poor relaxation. Dip net and hand collections. 6/22/1993 TF, EJ!
1173. Cottonwood Creek at Marsh Creek Road. Zone 12: 397,080E 4,719,340N. NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 21, T9S R36E, Arimo quad., Bannock Co., Idaho. Cottonwood Cr.-Marsh Cr.-Portneuf R.-Snake R.-Columbia R., Bannock Range, Marsh Valley. Cottonwood Creek at Marsh Creek Road crossing (W. side), SW of McCammon. Elev. 4680'. Depth 0-6". Small spring-fed cold creek run (channeled and pastured); no macrophytes; dominantly mud. Too impacted for hydrobiids; no snails seen. Dip net collection. 6/22/1993 TF, EJ!
1174. Stockton Creek. Zone 12: 422,260E 4,685,980N. Projected from NW corner; SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 6, T13S R39E, Swan Lake quad., Bannock Co., Idaho. Stockton Cr.-Bear R.-

Great Salt Lk., Portneuf Range. Stockton Creek collected along BLM fencing and E. of Stockton Creek Road, W. of Heart Mountain Spring, BLM. Elev. 5220'. Depth 6-20". Large, swift creek; scattered *Rorippa* and *Potamogeton filiformis*; dominantly mud, sand, and fine gravel substrate. *Physella* and sphaeriids; rare dead *Pyrgulopsis*. Dip net collection. 6/22/1993 TF, EJ! ]

1175. Hutchins Canyon 3. Zone 12: 422,040E 4,686,460N. Projected from NW corner; SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 6, T13S R39E, Swan Lake quad., Bannock Co., Idaho. Stockton Cr.-Bear R.-Great Salt Lk., Portneuf Range. Spring-fed creek in main canyon of Hutchins Canyon, about 0.3 mi. N. of Stockton Creek Road, BLM. Elev. 5320'. Depth 0-4". Badly trampled spring-fed creek; mud-gravel substrate; no macrophytes. No snails; badly grazed. Dip net and hand collection attempted. 6/22/1993 TF, EJ!

1176. Hutchins Canyon 2. Zone 12: 421,830E 4,686,600N. Projected from NW corner; NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 6, T13S R39E, Swan Lake quad., Bannock Co., Idaho. Stockton Cr.-Bear R.-Great Salt Lk., Portneuf Range. Spring-fed creek in NW tributary canyon to Hutchins Canyon, about 0.5 mi. N. of Stockton Creek Road, BLM. Elev. 5320'. Depth 0-6". Badly trampled spring-fed creek with mud-gravel substrate; no macrophytes. Dip net and hand collection attempted. No snails; very badly grazed. 6/22/1993 TF, EJ!

1177. Hutchins Canyon 4. Zone 12: 422,020E 4,686,300N. Projected from NW corner; SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 6, T13S R39E, Swan Lake 1982 quad., Bannock Co., Idaho. Stockton Cr.-Bear R.-Great Salt Lk., Portneuf Range. E.-facing shallow slope on W. side of Hutchins Canyon, ca. 0.25 mi. N. of Stockton Creek Road and W. of Hutchins Canyon Road, BLM. Elev. 5280'. Shallow, mostly open sage scrub; scattered quartzite cobbles and gravel. *Oreohelix* shelter under largest sage clumps; rare live; dead shells abundant over slope; badly grazed. Hand collected. 06/22/1993 TF, EJ!

1178. Hutchins Canyon 1. Zone 12: 422,100E 4,686,120N. Projected from NW corner; SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 6, T13S R39E, Swan Lake quad., Bannock Co., Idaho. Stockton Cr.-Bear R.-Great Salt Lk., Portneuf Range. Unnamed spring below access road in Hutchins Canyon (W. side) about 0.2 mi. N. of Stockton Creek Road, BLM. Elev. 5260'. Depth 0-2". Shallow, badly trampled cold spring run with patchy *Rorippa*; mud-fine gravel substrate; scattered cobbles. Spring in *Celtus* grove and below rocky (quartzite) slope. Badly impacted by grazing; *Pyrgulopsis* n. sp. locally common; uncommon *Lyogyrus*; essentially extinct in main creek. Dip net, tray collections. 6/22/1993 TF, EJ!

1179. Heart Mountain Spring run. Zone 12: 422,360E 4,685,980N. Projected from NW corner; SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 6, T13S R39E, Swan Lake quad., Bannock Co., Idaho. Stockton Cr.-Bear R.-Great Salt Lk., Portneuf Range. Heart Mountain Spring run on E. side of Stockton Creek and NW flank of Heart Mountain, BLM. Elev. 5240'. Depth 2-6". Large cold steep spring run, anastomosing near base; travertine sand-gravel substrate; common *Rorippa* in patches and slower shallower areas; spring run is complex, anastomoses occasionally. Common *Pyrgulopsis* and *Lyogyrus* in most areas; protected partially by fence. Hand, dip net, and tray collections. 6/22/1993 TF, EJ!

1180. Preston North spring. Zone 12: 424,440E 4,663,200N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 16, T15S R39E, Weston quad., Franklin Co., Idaho. Bear R.-Great Salt Lk. Unnamed spring just S. of historical monument W. of US91, in field at base of roadway, 3.5 rd. mi. NW of Preston. Elev. 4640'. Depth 0-4". Shallow cold spring, badly grazed, some *Rorippa* and *Urtica*; mud substrate. No snails; too heavily grazed. Dip net collection attempted. 6/23/1993 TF, EJ!

1181. Squaw Springs 1. Zone 12: 423,150E 4,663,080N. NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 17, T15S R39E, Weston quad., Franklin Co., Idaho. Bear R.-Great Salt Lk. N.-most spring (flowing

well) in Squaw Springs W. of Deer Creek Road near dilapidated building and W. of mouth of Deer Creek. Elev. 4470'. Depth 0-4". Very hot flowing well and associated hot seeps; common algae; sulphur smell. No snails; too hot, modified. 6/23/1993 TF, EJ!

1182. Squaw Springs 2. Zone 12: 423,200E 4,663,040N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 17, T15S R39E, Weston quad., Franklin Co., Idaho. Bear R.-Great Salt Lk. Middle spring in Squaw Springs in pasture to E. of Deer Creek Road near ruined resort. Elev. 4470'. Depth 2-6". Much modified hot spring; algae; sulphur smell. No snails; too hot, modified. Dip net collection attempted. 6/23/1993 TF, EJ!

1183. Squaw Springs 3. Zone 12: 423,200E 4,662,980N. NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 17, T15S R39E, Weston quad., Franklin Co., Idaho. Bear R.-Great Salt Lk. S.-most spring in Squaw Springs in pasture to E. of Deer Creek Road and S. of ruined resort buildings. Elev. 4470'. Depth 2-6". Hot spring with strong sulfurous smell; common green and red algae. No snails; too hot; grazed. 6/23/1993 TF, EJ!

1184. Home Canyon spring 1. Zone 12: 481,850E 4,687,610N. Unsurveyed; T12S R45E, Montpelier Canyon quad., Bear Lake Co., Idaho. Montpelier Cr.-Bear R.-Great Salt Lk., Preuss Range. Unnamed spring E. of Home Canyon Road (FS149) in Home Canyon, about 0.5 mi. N. of junction with US89, Caribou National Forest. Elev. 6520'. Depth 0-2". Shallow cold spring run along E. side of rd.; mud-cobble substrate (limestone); scattered *Rorippa*. Spring not on USGS map. *Lyogyrus* uncommon; cold spring impacted by road building and grazing; run only a few inches in width. Hand collected. 6/23/1993 TF, EJ!

1185. Home Canyon spring 2. Zone 12: 481,825E 4,687,725N. Unsurveyed; T12S R45E, Montpelier Canyon quad., Bear Lake Co., Idaho. Montpelier Cr.-Bear R.-Great Salt Lk., Preuss Range. Unnamed spring to W. of Home Canyon Road (FS149) in Home Canyon, ca. 0.6 mi. N. of junction with US89, Caribou National Forest. Elev. 6550'. Depth 0-6". Large cold spring run with travertine buildup, abundant *Rorippa* and *Mimulus*; piped in good part; calcareous substrate. Mostly piped; concrete box in upper part; no snails. Hand and dip net collections attempted. 6/23/1993 TF, EJ!

1186. Home Canyon talus 1. Zone 12: 481,825E 4,687,730N. Unsurveyed; T12S R45E, Montpelier Canyon 1970 quad., Bear Lake Co., Idaho. Montpelier Cr.-Bear R.-Great Salt Lk., Preuss Range. Talus surrounding large spring to W. of Home Canyon Road (FS149) in Home Canyon, ca. 0.6 mi. N. of junction with US89, Caribou National Forest. Elev. 6550'. *Urtica* covered limestone talus. Large *Oreohelix* fairly common. Hand collected. 06/23/1993 TF, EJ!

1187. Home Canyon spring 3. Zone 12: 482,200E 4,688,360N. Unsurveyed; T12S R45E, Montpelier Canyon quad., Bear Lake Co., Idaho. Montpelier Cr.-Bear R.-Great Salt Lk., Preuss Range. Unnamed spring on E. side of Home Canyon Road (FS149) in Home Canyon about 1.1 mi. N. of junction with US89, Caribou National Forest. Elev. 6640'. Dry; former cold spring now entirely diverted for domestic water supply. Completely piped; dry. No snails. 6/23/1993 TF, EJ!

1188. Home Canyon spring 4. Zone 12: 482,260E 4,688,780N. Unsurveyed; T12S R45E, Montpelier Canyon quad., Bear Lake Co., Idaho. Montpelier Cr.-Bear R.-Great Salt Lk., Preuss Range. Unnamed spring in ravine on W. side of Home Canyon Road (FS149) in Home Canyon, ca. 1.5 mi. N. of junction with US89, Caribou National Forest. Elev. 6680'. Depth 0-2". Formerly large cold spring; almost entirely boxed and piped for domestic water supply; remainder grazed; very shallow; mud substrate; scattered *Rorippa*. Rare *Lyogyrus* near source; only 2 collected to avoid further impact. Grazing damage severe also. Dip net collection. 6/23/1993 TF, EJ!

1189. Blue Pond Spring run. Zone 12: 459,220E 4,661,280N. SW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 24, T15S R42E, St. Charles quad., Bear Lake Co., Idaho. St. Charles Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Complex spring run below (S. of) St. Charles Creek Road (FS412) and N. of St. Charles Creek, St. Charles Canyon, Cache National Forest. Elev. 6460'. Depth 2-14". Several spring runs below road; common *Rorippa* locally; mud-quartzite boulder substrate. Cache National Forest, administered by Caribou National Forest. Rare and patchily distributed *Lyogyrus*. Hand and dip net collections. 6/24/1993 TF, EJ!

1190. Blue Pond Spring. Zone 12: 459,080E 4,661,320N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 24, T15S R42E, St. Charles quad., Bear Lake Co., Idaho. St. Charles Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Blue Pond Spring and outlet 0.1 mi. N. of St. Charles Creek Road (FS412), N. of St. Charles Creek, St. Charles Canyon, Cache National Forest. Elev. 6477'. Depth 0-18". Large ponded cold spring with mud substrate; gravel (limestone) substrate in run; large. Cache National Forest, administered by Caribou National Forest. Spring impacted by grazing and appears modified. No live snails except *Physella*; sphaeriids; no hydrobiids. Dip net collected. 6/24/1993 TF, EJ!

1191. Little Spring run. Zone 12: 460,180E 4,661,840N. Projected from NW corner; SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 19, T15S R43E, St. Charles quad., Bear Lake Co., Idaho. St. Charles Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Little Spring run just N. of St. Charles Creek Road (FS412), N. of St. Charles Creek, St. Charles Canyon, Cache National Forest. Elev. 6430'. Depth 0-18". Large cold spring run (despite name), mostly shallow, grazed, with mostly soft substrate (some quartzite and limestone cobbles); scattered *Rorippa* patches and some *Potamogeton filiformis*. Cache National Forest, administered by Caribou National Forest. Impacted by grazing; no dead *Lyogyrus*; some sphaeriids and *Physella* (not collected). Dip net collected. 6/24/1993 TF, EJ!

1192. Little Spring. Zone 12: 460,090E 4,661,840N. Projected from NW corner; Center NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 19, T15S R43E, St. Charles quad., Bear Lake Co., Idaho. St. Charles Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Source of Little Spring about 0.1 mi. N. of St. Charles Creek Road (FS412), N. of St. Charles Creek, St. Charles Canyon, Cache National Forest. Elev. 6440'. Depth 2-14". Large cold spring (despite name) with sand-boulder substrate; common *Rorippa*; *Potamogeton filiformis*. Substrate mostly limestone. Cache National Forest, administered by Caribou National Forest. No snails in large run near road; just at source. Mostly on wood and bark. Both *Lyogyrus* and *Pyrgulopsis* found, latter very rare. Hand, dip net, and brush and tray. 6/24/1993 TF, EJ!

1193. Saint Charles Spring. Zone 12: 461,660E 4,661,930N. Projected from NE corner; SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 19, T15S R43E, St. Charles quad., Bear Lake Co., Idaho. St. Charles Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Saint Charles Spring below (E. of) St. Charles Creek Road (FS412), W. of St. Charles Creek, St. Charles Canyon, Cache National Forest. Elev. 6200'. Depth 0-18". Piped at source; large cold spring run with mud-cobble (limestone, quartzite) substrate; some *Rorippa*; swift flow. Cache National Forest, administered by Caribou National Forest. Essentially destroyed by piping; should have hydrobiids. *Physella* and sphaeriids only, not collected. Dip net used. 6/24/1993 TF, EJ!

1194. Spring west of Saint Charles Spring. Zone 12: 461,580E 4,661,840N. Projected from NE corner; SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 19, T15S R43E, St. Charles quad., Bear Lake Co., Idaho. St. Charles Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Unnamed spring W. (0.2 mi.) of Saint Charles Spring below (SE of) St. Charles Creek Road (FS412), W. of St. Charles Creek, St. Charles Canyon, Cache National Forest. Elev. 6200'. Depth 0-6". Mud-fine gravel substrate; moderate-sized shallow cold spring run; scattered *Rorippa* patches; slow flow. Spring not shown on USGS map. Cache National Forest, administered by Caribou National Forest. Piped at source;

dead *Lyogyrus* in sediment; *Physella*, sphaeriids, and dead *Lyogyrus* only. Dip net collection. 6/24/1993 TF, EJ!

1195. Spring Creek at US89. Zone 12: 467,340E 4,665,880N. SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T15S R43E, Paris quad., Bear Lake Co., Idaho. Spring Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Spring Creek at US89 N. of St. Charles about 1.5 mi. Elev. 5930'. Depth 0-14". Large spring-influenced creek with mud-silt bottom, some *Rorippa* patches present, *Potamogeton pectinatus* common. Large cold spring run, but heavy agricultural impact. No mollusks. Dip net collection attempted. 6/24/1993 TF, EJ!

1196. Bloomington Creek spring 1. Zone 12: 460,990E 4,670,900N. Projected from NW corner; NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 19, T14S R43E, Paris quad., Bear Lake Co., Idaho. Bloomington Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Unnamed spring tributary of Bloomington Creek, E. of Jarvis Spring on N. side of Bloomington Canyon Road (FS409). Elev. 6200'. Depth 0-3". Cold spring with mud bottom; no macrophytes; common woody debris. Spring dug out and destroyed; no snails. Dip net collection. 6/24/1993 TF, EJ!

1197. Jarvis Spring. Zone 12: 460,260E 4,670,900N. Projected from NW corner; NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 19, T14S R43E, Paris quad., Bear Lake Co., Idaho. Bloomington Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Jarvis Spring, tributary of Bloomington Creek on N. side of Bloomington Canyon Road (FS409), from source to road crossing. Elev. 6320'. Depth 0-6". Large cold spring run with local rocky patches (quartzite predominant, with some limestone) but silt-sand substrate generally. *Rorippa* beds; local *Potamogeton pectinatus*. *Lyogyrus* patchily distributed. Spring source has been somewhat modified. Dip net and hand collections. 6/24/1993 TF, EJ!

1198. Cold Spring. Zone 12: 452,090E 4,708,440N. Unsurveyed; T10S R42E, Soda Peak quad., Bear Lake Co., Idaho. Cow Fk.-Eightmile Cr.-Bear R.-Great Salt Lk., Bear River Range. Cold Spring just w. of Cold Spring Campground, about 0.15 mi. along Grace Road (FS402), ca. 2.1 mi. S. of Eightmile Forest Service Ranger Station, Cache National Forest. Elev. 6380'. Depth 2-24". Rocky (quartzite) substrate, with mixed mud-cobbles, few macrophytes. Cache National Forest, administered by Caribou National Forest. Very swift flow; may have been mucked out. *Physella* and sphaeriids only; not collected. Dip net collection. 6/25/1993 TF, EJ!

1199. Swan Lake unnamed spring. Zone 12: 460,780E 4,670,840N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 36, T9S R42E, Fossil Canyon quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Aspen Range. Unnamed spring alongside FS127, ca. 0.4 mi. off US30, in horse pasture (Lakey Farm). Elev. 5970'. Depth 0-18". Small "formation spring" with travertine border, inlet and outlet modified; abundant epiphytic algae, *Potamogeton pectinatus*, *Rorippa*, some *Veronica*. Seems eutropified; agricultural impact. Only *Physella*, *Stagnicola caperata*, and sphaeriids seen; not collected. Dip net collection. 6/25/1993 TF, EJ!

1200. Swan Lake. Zone 12: 461,140E 4,717,100N. SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 30, T9S R43E, Fossil Canyon quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Aspen Range. Swan Lake near foot of range and mouth of N. side of Swan Lake Gulch, 0.2 mi. from FS127 up gulch, ca. 1.2 mi. from US30, Caribou National Forest. Elev. 6180'. Depth 0-24". Large calcareous travertine ring with steep overhanging sides; no obvious outlet. Moderately deep lake with calcareous silt-cobble" bottom, no macrophytes. Lack of mollusks and macrophytes puzzling-poisoned out? Travertine preserves plant fossils; no obvious mollusks either. Small fish present. Dip net collection attempted. 6/25/1993 TF, EJ!

1201. Stauffer Creek tributary. Zone 12: 465,890E 4,699,380N. NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 22, T11S R43E, Nounan quad., Bear Lake Co., Idaho. Stauffer Cr.-Bear R.-Great Salt Lk., Nounan Valley. Side channel to Stauffer Creek, ca. 0.25 mi. E. of main channel, collected on S. side of

Nounan Road. Elev. 5919'. Depth 4-16". Muddy swift medium-sized creek channel; no macrophytes. No snails seen; major agricultural runoff and grazing impact. Dip net used. 6/25/1993 TF, EJ! o

1202. Stauffer Creek. Zone 12: 465,570E 4,699,440N. SW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> sec. 22, T11S R43E, Nounan quad., Bear Lake Co., Idaho. Stauffer Cr.-Bear R.-Great Salt Lk., Nounan Valley. Stauffer Creek at Nounan Road bridge. Elev. 5900'. Depth 0-3'. Creek with mud-silt bottom. Some cobbles present. *Potamogeton filiformis* and epiphytic algae present. Fairly deep, turbid water. D. W. Taylor site for *Valvata utahensis* ca. 1960. Looks like poor water quality (major agricultural runoff, grazing-impacted). *Physa* and dead sphaeriids only; not retained. Dip net collection. 6/25/1993 TF, EJ!

1203. Garden Creek Gap. Zone 12: 393,800E 4,713,960N. SE<sub>1/4</sub> NE<sub>1/4</sub> NE<sub>1/4</sub> sec. 12, T10S R35E, Hawkins quad., Bannock Co., Idaho. Garden Cr.-Portneuf R.-Snake R.-Columbia R., Bannock Range. Garden Creek at Garden Creek Gap, between Old Tom Mountain and Cedar Mountain, S. side of Arimo Road. Elev. 5280'. Depth 2-36". High mountain creek; cold and swift; no macrophytes; metamorphic substrate; boulder-sand. No snails; odd "*Heuchera*" on cliff face. Hand and dip net collections attempted. 6/26/1993 TF, EJ!

1204. Bear River at ID34 bridge. Zone 12: 431,220E 4,668,360N. SE<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> & SW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 31, T14S R40E, Riverdale quad., Franklin Co., Idaho. Bear R.-Great Salt Lk. Bear River at ID34 bridge just N. of Riverdale. Elev. 4520'. Depth 0-4'. Medium-sized river; cobble substrate; minor macrophytes (*Potamogeton filiformis*); common brown algal coating on rocks. D. Taylor 59-95 and Gregg 7885. *Pyrgulopsis* n. sp. formerly found in the river. No snails; agricultural impact. 6/23/1993 TF, EJ!

1206. Unnamed spring east of Corduroy Spring. Zone 12: 456,200E 4,670,270N. SW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> sec. 22, T14S R42E, Paris Peak quad., Bear Lake Co., Idaho. Bloomington Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Moderate-sized unnamed spring along Bloomington Creek Road (FS409) in headwaters of Bloomington Creek on N. side of creek, ca. 0.15 mi. E. of Corduroy Spring, Cache National Forest. Elev. 7000'. Depth 2-6". Mud-gravel substrate; no macrophytes; very cold oligotrophic spring. Spring not on USGS map. Cache National Forest, administered by Caribou National Forest. No mollusks. Hand and dip net collections attempted. 6/24/1993 TF, EJ!

1207. Bloomington Creek spring 1. Zone 12: 455,470E 4,670,040N. NE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 27, T14S R42E, Paris Peak quad., Bear Lake Co., Idaho. Bloomington Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Unnamed spring along Bloomington Creek Road (FS409), 0.3 mi. E. of junction of the forks of Bloomington Creek, N. of creek below (SE of) Paris Peak, Cache National Forest. Elev. 7220'. Depth 4-14". Medium-sized cold, clear oligotrophic spring, collected at source; mud-sand substrate; some CO<sub>2</sub> bubbles; no macrophytes. Cache National Forest, administered by Caribou National Forest. High elevation spring; no mollusks found. Dip net collection attempted. 6/24/1993 TF, EJ!

1208. Bloomington Creek spring 2. Zone 12: 455,150E 4,669,950N. NW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 27, T14S R42E, Paris Peak quad., Bear Lake Co., Idaho. Bloomington Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Unnamed spring at the forks of Bloomington Creek, just N. of Bloomington Creek Road (FS409), Paris Peak (S. flank), Cache National Forest. Elev. 7240'. Depth 2-6". Very cold oligotrophic spring; no macrophytes; broad, swift run; cobble-boulder substrate. Cache National Forest, administered by Caribou National Forest. No mollusks; high elevation spring. Hand and dip net collections attempted. 6/24/1993 TF, EJ!

1209. Bear Lake spring 1. Zone 12: 466,800E 4,646,260N. NE<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> sec. 8, T14N R4E, Garden City quad., Rich Co., Utah. Bear Lk.-Bear R.-Great Salt Lk., Bear Lake Plateau. Unnamed spring collected on both sides of US89 (source on W. side), ca. 1.2 mi. S. of Lakota, near UT Daughters of the Pioneers monument and ca. 0.3 mi. N. of Bear Lake State Recreation Area, on W. shore of Bear Lake. Elev. 5940'. Depth 2-6". Large cold spring with cobble-boulder substrate; dense *Rorippa*; local *Mimulus*; some sand and mud beneath *Rorippa* mat. Spring partly submerged by Bear Lake during high water. Spring not shown on USGS map. *Pyrgulopsis pilsbryana?* quite abundant; fossil (Holocene) also; *Fossaria*; *Physella*. Hand, brush and tray collections. 6/24/1993 TF, EJ!

1210. Mud Lake spring 1. Zone 12: 477,900E 4,667,970N. NW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 36, T14S R44E, Dingle quad., Bear Lake Co., Idaho. Bear Lk.-Bear R.-Great Salt Lk., Bear Lake Plateau. Unnamed spring to E. side of Merkley Lake Road, ca. 0.7 mi. S. of Merkley Lake and 4.0 mi. S. of Dingle, W. of Merkley Mountain, E. of Mud Lake, just E. (outside) of Bear Lake National Wildlife Refuge boundary. Elev. 5940'. Depth 2-4". Cold spring in marshy area to E. of extensive *Scirpus* marsh in Mud Lake; some *Scirpus* and *Typha*; common *Rorippa* near road; shallow mud-gravel substrate. Spring not on USGS map. *Pyrgulopsis* locally common, especially near road; no hot spring influence; *Physella* and sphaeriids common; somewhat modified by road building and grazing. Dip net and hand collections. 6/25/1993 TF, EJ!

1211. Mud Lake spring 2. Zone 12: 478,260E 4,663,390N. SW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 13, T15S R44E, Bear Lake North quad., Bear Lake Co., Idaho. Bear Lk.-Bear R.-Great Salt Lk., Bear Lake Plateau. Unnamed spring along Merkley Lake Road (E. side), ca. 7.1 mi. S. of Dingle, E. of extensive *Typha* marsh in Mud Lake; in Bear Lake National Wildlife Refuge; W. side of Lake Ridge. Elev. 5950'. Depth 2-8". Medium sized cold spring at source and in run alongside road; abundant *Rorippa*; common *Chara* locally; no hot spring influence; mud-gravel substrate; modified by road building; possibly some grazing damage. Spring not on USGS map. Small *Pyrgulopsis (pilsbryana?)* abundant; no *Lyogyrus*; *Physella*; sphaeriids. Dip net; brush and tray collections. 6/25/1993 TF, EJ!

1212. Mud Lake springs 3. Zone 12: 478,220E 4,663,080N. SE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 13, T15S R44E, Bear Lake North quad., Bear Lake Co., Idaho. Bear Lk.-Bear R.-Great Salt Lk., Bear Lake Plateau. Series of eight unnamed springs (mix of obvious hot and less obvious cold) for ca. 0.25 mi. along Merkley Lake Road on E. side of Mud Lake, ca. 0.8 mi. N. of Turnpike junction; in Bear Lake National Wildlife Refuge; W. side of Lake Ridge. Elev. 5950'. Depth 1-8". Mix of *Typha* and *Scirpus* marsh and free-flowing spring run on E. side of road; hot springs with red, green, and brown algae; cold with *Typha*, *Scirpus*, some *Rorippa*; abundant *Chara* locally (in both cold and warm water); mostly mud substrate. Springs not on USGS map. *Pyrgulopsis (pilsbryana?)* local; sphaeriids and *Physella* (including yellow-bodied form (albino?)) in hot spring drainage; modified by road building. Dip net collections. 6/25/1993 TF, EJ!

1213. Mud Lake spring 4. Zone 12: 478,220E 4,662,330N. NE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 13, T15S R44E, Bear Lake North quad., Bear Lake Co., Idaho. Bear Lk.-Bear R.-Great Salt Lk., Bear Lake Plateau. Unnamed partly developed hot spring on E. side of Merkley Lake Road (E. side of Mud Lake), ca. 0.4 mi. N. of Turnpike junction. Elev. 5960'. Depth 2-6". Hot spring with abundant red and green algae locally; no macrophytes; mud-gravel substrate; quite hot. Partly piped and developed; no mollusks (too hot?). Dip net collection. 6/25/1993 TF, EJ!

1214. Mud Lake spring 5. Zone 12: 478,290E 4,661,960N. SW<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 13, T15S R44E, Bear Lake North quad., Bear Lake Co., Idaho. Bear Lk.-Bear R.-Great Salt Lk., Bear Lake Plateau. Hot spring collected on both sides of Merkley Lake Road (E. side of Mud Lake), ca. 0.2 mi. N. of Turnpike junction. Elev. 5930'. Depth 0-2". Hot spring originating on E. side of road and continuing on W. side; very shallow, broad run on W.; muddy substrate; abundant red and

green epiphytic algae; no macrophytes. Hot spring not shown on USGS map. Hot at source; warm W. of road, no mollusks except fossils. Hand and dip net collection. 6/25/1993 TF, EJ!

1215. Bear Lake Hot Spring. Zone 12: 478,125E 4,661,620N. NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 24, T15S R44E, Bear Lake North quad., Bear Lake Co., Idaho. Bear Lk.-Bear R.-Great Salt Lk., Bear Lake Plateau. Bear Lake Hot Spring S. of Merkley Lake Road near its junction with Eastside Lake Road, NE side of Bear Lake just outside S. boundary of North Beach Park. Elev. 5940'. Depth 0-2". Very shallow spring runs surviving near and in ruins of resort (most flow captured); no macrophytes. No mollusks; only warm water, perhaps over-developed. 6/25/1993 TF, EJ!

1216. Indian Creek east of Eastside Lake Road. Zone 12: 478,860E 4,660,020N. Center SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 25, T15S R44E, Bear Lake North quad., Bear Lake Co., Idaho. Indian Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear Lake Plateau. Indian Creek collected on E. side of Eastside Lake Road across from ranch buildings, ca. 1.2 mi. S. of Turnpike junction. Elev. 6010'. Depth 0-2". Sizable permanent cold creek; cobble-mud substrate; no macrophytes; most diverted to ranch (may now go dry occasionally?). Sphaeriids, rare *Physella*; heavy grazing. Hand and dip net collection. 6/25/1993 TF, EJ!

1217. Bear Lake spring 2. Zone 12: 479,240E 4,658,390N. NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 36, T15S R44E, Bear Lake North quad., Bear Lake Co., Idaho. Bear Lk.-Bear R.-Great Salt Lk., Bear Lake Plateau. Unnamed spring just E. of Eastside Lake Road, ca. 2.7 mi. S. of Turnpike (junction of Eastside Lake Road and Merkley Lake Road); on E. side of Bear Lake. Elev. 6000'. Depth 0-6". Small cold run with sand-fine gravel-limestone pebbles; strong grazing impact; some shrubby trees; some *Rorippa*. Spring not on USGS map. *Pyrgulopsis pilsbryana?* sporadic; sphaeriids also. Dip net collections. 6/25/1993 TF, EJ!

1218. Bear Lake spring 3. Zone 12: 479,340E 4,657,980N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 36, T15S R44E, Bear Lake North quad., Bear Lake Co., Idaho. Bear Lk.-Bear R.-Great Salt Lk., Bear Lake Plateau. Unnamed spring run to E. of Eastside Lake Road (E. side of Bear Lake), ca. 3.0 mi. S. of Turnpike junction. Elev. 5970'. Depth 2-6". Narrow muddy spring run (some cobbles); local *Rorippa*; woody debris. *Pyrgulopsis pilsbryana?* sporadic, partly because of swift flow; modified; heavy grazing. Dip net and hand collections. 6/25/1993 TF, EJ!

1219. Mouth of St. Charles Creek. Zone 12: 469,830E 4,662,270N. NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 18, T15S R44E, Bear Lake North quad., Bear Lake Co., Idaho. St. Charles Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear Lake Plateau. Mouth of "Little Creek" (cutoff and old channel of St. Charles Creek) at NW corner of Bear Lake, collected off county road, ca. 0.7 mi. S. of Turnpike Road. Elev. 5920'. Depth 4-20". Large swift cold creek; mud-cobble substrate; macrophytes (*Ceratophyllum*, *Chara*) in slow areas and pool. No hydrobiids; nutrient-enriched; common endemic suckers; *Physella*, sphaeriids only; not retained. Hand and dip net collection. 6/25/1993 TF, EJ!

1220. St. Charles Canyon spring 1. Zone 12: 455,680E 4,659,530N. NW $\frac{1}{4}$  & SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 27, T15S R42E, Egan Basin quad., Bear Lake Co., Idaho. St. Charles Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Unnamed spring on W. side of Middle Fork St. Charles Creek, S. of FS412, S. of Cloverleaf Campground at the head of St. Charles Canyon, Cache National Forest. Elev. 7190'. Depth 0-2". Cold spring piped at source; cobble-sand substrate with mixed lithologies (mostly limestone); scattered *Rorippa*. Cache National Forest, administered by Caribou National Forest. Looks relatively unimpacted below campground piping; no mollusks. 6/24/1993 TF, EJ!

1221. St. Charles Canyon spring 2. Zone 12: 455,960E 4,660,540N. SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 22, T15S R42E, Egan Basin quad., Bear Lake Co., Idaho. N. Fk. St. Charles Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Unnamed spring at North Fork Trailhead, S. side of

North Fk. St. Charles Creek, W. of trailhead parking lot at the end of FS716, NW of Cloverleaf Campground, head of St. Charles Canyon, Cache National Forest. Elev. 6930'. Depth 1-4". Cold spring with some *Rorippa*, common bryophytes, common woody debris; mud-sand bottom. Spring not shown on USGS map. Cache National Forest, administered by the Caribou National Forest. *Lyogyrus* common; hand and dip net collections. 6/24/1993 TF, EJ!

1222. St. Charles Canyon spring 3. Zone 12: 455,880E 4,660,590N. NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 22, T15S R42E, Egan Basin quad., Bear Lake Co., Idaho. N. Fk. St. Charles Cr.-St. Charles Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Unnamed spring at North Fork Trailhead, S. side of North Fk. St. Charles Creek, W. of trailhead parking lot at the end of FS716, NW of Cloverleaf Campground, head of St. Charles Canyon, Cache National Forest. Elev. 6920'. Depth 1-4". Cold spring with mud-sand and rare cobble substrate, abundant woody debris. Scattered *Rorippa*, common bryophytes on stones. Spring not shown on USGS map. Cache National Forest, administered by Caribou National Forest. Common *Lyogyrus* collected by hand and dip net. 6/24/1993 TF, EJ!

1223. St. Charles Canyon spring 4. Zone 12: 455,730E 4,660,660N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 22, T15S R42E, Egan Basin quad., Bear Lake Co., Idaho. N. Fk. St. Charles Cr.-St. Charles Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Unnamed spring 0.1 mi. W. of North Fork Trailhead (end of FS716), along N. side of North Fk. St. Charles Creek, NW of Cloverleaf Campground, head of St. Charles Canyon, Cache National Forest. Elev. 6940'. Depth 1-4". Cold, fast spring with cobble bottom; no macrophytes. Cache National Forest, administered by Caribou National Forest. No mollusks found. 6/24/1993 TF, EJ!

1224. St. Charles Canyon spring 5. Zone 12: 455,710E 4,660,790N. SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 22, T15S R42E, Egan Basin quad., Bear Lake Co., Idaho. N. Fk. St. Charles Cr.-St. Charles Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Unnamed spring E. of North Fork Trail, about 0.2 mi. from trailhead (end of FS716), N. side of North Fk. St. Charles Creek, NW of Cloverleaf Campground, head of St. Charles Canyon, Cache National Forest. Elev. 7000'. Depth 1-5". Large cold spring with cobble substrate; *Veronica* and *Rorippa* in scattered patches. Cache National Forest, administered by Caribou National Forest. *Lyogyrus* very rare. Hand-collected from cobbles. 6/24/1993 TF, EJ!

1290. Clearwater River at Spaulding Mission. Nez Perce Co., Idaho. Clearwater R.-Snake R.-Columbia R. N. side of Clearwater River above Potlatch lumber mill, below historical marker for Spaulding Mission, along US12 E., E. of Lewiston and 1.3 mi. E. of US95 turnoff. Big river with large cobble-boulder substrate (mostly basalt). Low flow; slow current locally. No macrophytes; common epiphytic algae on rocks. Snails uncommon; *Fluminicola*, *Physella*, *Ferrissia*. River looks somewhat eutropified. Hand collection. 10/11/1993 TF, EJ!

1291. Unnamed spring at Spaulding Mission. (112) Nez Perce Co., Idaho. Clearwater R. Small spring on N. side of Clearwater River above historical marker for Spaulding Mission, along US12 E., E. of Lewiston and 1.3 mi. E. of US95 turnoff. Small cold spring with local patches of *Rorippa*. *Typha* in ditch along road. Muddy substrate with common basalt pebbles. Cover of *Rubus* and *Salix*, Russian olive. No freshwater molluscs; land snails rare; 2 juvenile *A. ptychophora* collected. 10/11/1993 TF, EJ!

1292. Rapid River 1 (113). NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 12, T23N R1W, Heavens Gate 1979 quad., Idaho Co. S-facing hillside on N. side of Rapid River at lower trail gate, near (SW of) Rapid River Hatchery (Idaho Power), Rapid River Wild and Scenic River. Elev. 2220'. Rocky, steep grassy slope. Most liths limestone, cobble-sized. Scattered *Celtis*, most cover grass. Slope rather dry and exposed. Large *Oreohelix* n. sp. 12. Snails locally common. 10/2/1990 TF, GH! *Oreohelix*

n. sp. 12; most 2/3 grown; rare just-hatched juveniles. Snails locally common. 10/11/1993 TF, EJ! [B5]

1293. Rapid River 2 (114). SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 12, T23N R1W, Heavens Gate 1979 quad., Idaho Co. S.-facing hillside on N. side of Rapid River ca. 0.25 miles SW of lower trail gate, above and below lower trail (not shown on USGS map) near its western terminus and below upper trail (113), Nez Perce National Forest (Rapid River Wild and Scenic River). Elev. 2220'. Rocky, steep grassy slope at base of rock cliff. Most liths limestone, cobble-sized. Scattered *Celtus*, *Astragalus*, *Artemisia*; but most cover grass. Slope rather dry and exposed. Two *Oreohelix* n. sp. 12 and n. sp. 14, *Cryptomastix mullani olneyae*, and *Allogona ptychophora ptychophora* hand collected. 10/2/1990 TF, GH! Snails in scattered colonies in most favorable locations. Collected from base of floodplain to cliff base. Two *Oreohelix* n. sp. (12 & 14), both in *intersum* group. Larger with fine ribs, large umbilicus. Smaller almost flat, with produced keel, basal angulation, coarse ribs. Also odd *Cryptomastix*, *Euconulus fulvus* subsp., *Allogona ptychophora ptychophora*. Most submature; some fresh hatched juveniles. 10/11/1993 TF, EJ! [B5]

1294. Rapid River 3 (115). SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 12, T23N R1W, Heavens Gate 1979 quad., Idaho Co. E.-facing slope above F. S. trail on W. side of Rapid River, ca. 0.1 mile N. of Thorn Gulch, Nez Perce National Forest (Rapid River Wild and Scenic River). Elev. 2220'. Open, rather dry, steep grassy slope with scattered *Celtus* and *Artemisia*. Scattered talus patches. Most liths limestone, cobble-sized. Quite dry except very locally. Snails rare; 2 *Oreohelix* present, one small, keeled (n. sp. 14); second n. sp. 12 (looks more like classic *intersum*). Hand collected. 10/11/1993 TF, EJ! [B5]

1295. Rapid River 4 (116). SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 12, T23N R1W, Heavens Gate 1979 quad., Idaho Co. N. and S. sides of unnamed gulch ca. 0.1 mile S. of Thorn Gulch, W. side of Rapid River above F. S. trail, Nez Perce National Forest (Rapid River Wild and Scenic River). Elev. 2280'. Range from mossy, partly forested talus slopes to dry, grassy, rocky open hillside. Lithology metasedimentary. Snails scattered, locally common. *Oreohelix* n. sp. 12 mostly in drier areas; *Cryptomastix* (odd morph.) mostly in wetter areas, associated with rare (and dead) *Allogona ptychophora ptychophora*. Most snails subadult; a few fresh juveniles. 10/11/1993 TF, EJ! [B5]

1296. Riggins Bridge 1 (1). W $\frac{1}{2}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T24N R1E, Riggins 1964 quad., Idaho Co. W.-facing cliff base on E. side of US95, from the Riggins bridge NE about 0.2 mile, E. side of the Salmon River, ca. RM 83.9-84.0, BLM lands. Elev. 1760'. Dry cliffs (metamorphic rock) with sporadic small talus piles; mostly grassy; scattered *Celtus*. Small *Cryptomastix* n. sp. 5 (full ontogeny and all conditions); few dead *Oreohelix idahoensis idahoensis*. Snails very sporadic. Hand collected. 10/12/1993 TF, EJ! [B27]

1297. Riggins Bridge 2 (2). SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 2, T24N R1E, Riggins 1964 quad., Idaho Co. Small talus piles below road to gully, S. of seeps from unnamed gully, E. of US95 ca. 0.3 mile NE of Riggins Bridge, E. side of the Salmon River at RM 83.8, BLM lands. Elev. 1760'. Metamorphic rocks (low-grade schist); mostly grasses, scattered *Celtus*. Uncommon small *Cryptomastix* n. sp. 5 (all conditions); *Helicodiscus salmoneus* (not retained); *Vallonia cyclophorella*. Hand collected. Photographed. 10/12/1993 TF, EJ! [B27]

1298. Riggins Bridge 3 (3). SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T24N R1E, Riggins 1964 quad., Idaho Co. Between Salmon River (E. side) and pulloff from US95 (W. side), 0.2 mile NE of Riggins Bridge at RM 83.9, just above high water mark, BLM lands. Elev. 1720'. Boulder piles (mixed lithologies) in sandy matrix; rather dry; mostly grasses, scattered *Celtus*, *Rhus diversiloba*, *Clematis*. Snails very rare; small low *Cryptomastix* n. sp. 5 (all conditions). 10/12/1993 TF, EJ! [B27]

1299. Riggins Bridge 5. Salmon R.-Snake R.-Columbia R., Salmon R. E. side of Salmon River at RM 84.0, below pulloff W. of US95 and 0.15 mi. NE of Riggins Bridge above Time Zone Rapids. BLM land. Elev. 1700'. Depth 2-12". Boulders and cobbles (mixed lithologies) in sand matrix; no macrophytes; uncommon epiphytic algae; moderate current; clear, cold, well-oxygenated river. Common *S. idahoensis* and *Fluminicola*; *Physella*, small adult *G. angulata*. 10/12/1993 TF, EJ!

1300. Riggins Bridge 4 (4). NW $\frac{1}{4}$  SE $\frac{1}{4}$  & SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 2, T24N R1E, Riggins 1964 quad., Idaho Co. W.-facing steep slope and short cliffs 0.7-0.8 mile NE of Riggins Bridge, E. of (above) US95 at about road mile 199.0, E. of Salmon River at RM 83.3-83.4; has traces of old pioneer road and remnants of old US95 grade, BLM lands. Elev. 1700'. Depth 2-12". Dry, short cliffs and talus, exposed bedrock (schist); mixed vegetation (grasses, *Celtus*, *Artemisia*, and *Opuntia*). Snails rather sparse and in all conditions; *Oreohelix* n. sp. 21; *Cryptomastix harfordiana*. Hand collected. 10/12/1993 TF, EJ! [B26]

1301. South of Lightning Creek 2. W $\frac{1}{2}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 35, T25N R1E, Riggins 1964 quad., Idaho Co. W.-facing steep talus 0.4 mile S. of the mouth of Lightning Creek, E. side of US95 at road mile 198.3, E. of Salmon River at RM 83.1, BLM lands. Elev. 1720'. Half of the site behind fence. Large schist boulders and large-scale talus; very common *Celtus*, *Rhus diversiloba*, grasses; scattered *Opuntia*. Moderately common *Cryptomastix harfordiana* (all conditions); *Helicodiscus salmoneus* not retained. Hand collected. Photographed. 10/12/1993 TF, EJ! [B26]

1302. South of Lightning Creek 1. E $\frac{1}{2}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 35, T25N R1E, Riggins 1964 quad., Idaho Co. W.-facing talus 0.25 mile S. of mouth of Lightning Creek, E. of US95 at road mile 198.5, considerably above roadway, E. side of Salmon River at RM 82.9-83.0, BLM lands. Elev. 1800-1880'. Dry steep schist talus consisting of small flat slabs; *Celtus*, grasses, common *Artemisia*, *Opuntia*. *Oreohelix* n. sp. 23; *Cryptomastix harfordiana*. Hand collected. 10/19/1989 TF, EJ. Uncommon *Oreohelix* n. sp. 23; *Cryptomastix harfordiana*. Hand collected. 10/2/1990 TF, GH! [B26]

1303. Mouth of Cherry Creek. SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 35, T25N R1E, Riggins 1964 quad., Idaho Co. W. and N.-facing cliffy area on S. side of Cherry Creek at mouth, E. of US95 at road mile 199.1, E. side of Salmon River at RM 82.3, BLM lands. Elev. 1720-1740'. Steep, exposed schist bedrock, considerable soil with moss and *Seligeria* cover; minor *Rhus diversiloba*, *Celtus*, grasses. Uncommon *Oreohelix* n. sp. 21 (most dead); rare live, abundant dead *Cryptomastix* n. sp. 5; *Helicodiscus salmoneus* not retained; *Vitrina alaskana*; *Vallonia cyclophorella*. Hand collected. Photographed. 10/12/1993 TF, EJ! [B26]

1304. South of Chair Creek (91). SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  & NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 26, T25N R1E, Riggins 1964 quad., Idaho Co. SW-facing talus above (NE of) US95 from the mouth of Chair Creek SE to 0.2 mile, NE side of Salmon River at RM 81.7-81.9. Elev. 1800-1820'. Large-scale schist bedrock and boulders; scattered talus piles; *Rhus diversiloba*, common *Celtus*, grasses. Land snails hand collected. 10/4/1990 TF, GH! Common large *Oreohelix* n. sp. 23; rarer *Cryptomastix* n. sp. 5. Hand collected. 10/12/1993 TF, EJ! [B26]

1305. Opposite Traps Creek (8). NW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  & NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 27, T25N R1E, Riggins 1964 quad., Idaho Co. SW-facing slope 0.2-0.3 mile NW of mouth of Chair Creek, opposite Traps Creek, NE of US95, NE side of Salmon River at RM 81.3-81.4, BLM lands. Elev. 1740-1760'. Slope with large boulders and exposed schist bedrock, small scattered talus piles; *Rhus diversiloba*, common *Celtus*, *Opuntia*, grasses. Moderately common *Oreohelix* n. sp. 23 and *Cryptomastix* n. sp. 5 (full ontogeny); *Helicodiscus salmoneus* and *Vitrina alaskana* not retained. Hand collected. 10/12/1993 TF, EJ! [B26]

1306. North of Fiddle Creek (9). SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 23, T25N R1E, Riggins 1964 quad., Idaho Co. N.-facing cliff, S. of US95 at road mile 201.1-201.2, N. of Fiddle Creek, S. side of Salmon River at RM 80.0-80.1. Elev. 1680'. Cliff with schist boulders and minor talus piles at base; common mosses and *Seligeria*. Rare recent and long-dead *Oreohelix* n. sp. 21; moderately common live *Cryptomastix* (weak teeth, narrow lip). Hand collected. 10/13/1993 TF, EJ! [B26]

1307. Boulder piles at Salmon River RM 79.5-79.7 (lower) (10). W $\frac{1}{2}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  & W $\frac{1}{2}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 23, T25N R1E, Riggins 1964 quad., Idaho Co. Boulder piles at base of N.-facing road cut (partly cut into old terrace) immediately SE of US95 at road mile 201.8-202.0, N. of mine site, SE of Salmon River at RM 79.5-79.7, BLM lands. Elev. 1680'. Boulders piles (mixed lithologies) along highway derived from old terrace deposit; almost no vegetation (some grasses). Snails uncommon; *Oreohelix* n. sp. 23 and *Cryptomastix* n. sp. 5 in all conditions. Hand collected. 10/13/1993 TF, EJ! [B26]

1308. Steep slope at Salmon River RM 79.5-79.7 (upper) (11). SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  & SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 23, T25N R1E, Riggins 1964 quad., Idaho Co. N.-facing steep slope above and SE of US95 at road mile 201.8-202.0, N. of mine site, SE of Salmon River at RM 79.5-79.7, BLM lands. Elev. 1720'. Steep slope above highway cut with exposed schist bedrock and small talus piles; common *Rhus diversiloba*; grasses; *Sorbus*; some *Celtus*. Common *Oreohelix* n. sp. 23 with full ontogeny and all conditions present; *Cryptomastix* n. sp. 5 rather rare (all conditions); *Vitrina alaskana*. Hand collected. 10/13/1993 TF, EJ! [B26]

1309. North of White Bird Creek 1 (12). SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 22, T28N R1E, White Bird 1962 quad., Idaho Co. Two small ravines to NE of Lyons Bar access road above (N. of) White Bird Creek, E. of Salmon River at RM 53.4. Elev. 1560'. Two deep ravines (basalt bedrock) with small basalt talus piles at their mouths; S. and W.-facing; dry, open, with scattered *Celtus*. Moderately common *Oreohelix jugalis* in all conditions; very rare *Cryptomastix mullani olneyae*; long-dead *Allogona ptychophora ptychophora*. Hand collected. 10/13/1993 TF, EJ! [B39]

1310. Opposite and south of Hammer Creek (13). SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 15, T28N R1E, White Bird 1962 quad., Idaho Co. W.-facing talus piles on nose of ridge overlooking Salmon River (E. of) opposite and S. of mouth of Hammer Creek, along (E. side) Lyons Bar access road, approximately RM 53.1, BLM lands. Elev. 1470'. Basalt talus piles with grasses and *Celtus*, *Ailanthis*. No mollusks found. 10/13/1993 TF, EJ! [B39]

1311. Opposite Hammer Creek (14). NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 15, T28N R1E, White Bird 1962 quad., Idaho Co. W.-facing talus piles just S. of unnamed gully, below old pioneer road, along (E. of) Lyons Bar access road, E. side of Salmon River at RM 52.9, opposite mouth of Hammer Creek, BLM lands. Elev. 1480'. Basalt talus piles; mossy, abundant *Celtus*; soil mixed into talus. *Oreohelix jugalis*, *Allogona ptychophora ptychophora*, *Cryptomastix* n. sp. 6, and other snails hand collected. 9/30/1990 TF, GH! Rare *Oreohelix jugalis* and *vortex*; common *Allogona ptychophora ptychophora*; rare *Cryptomastix* n. sp. 6 (all conditions); *Cochlicopa lubrica*; *Vitrina alaskana*; *Vallonia cyclophorella*. Snails hand collected. Litter sample collected. 10/13/1993 TF, EJ! [B39]

1312. Opposite and north of Hammer Creek (15). SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  & NW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 15, T28N R1E, White Bird 1962 quad., Idaho Co. W.-facing talus piles along (E. of) Lyons Bar access road, E. side of Salmon River opposite and N. of mouth of Hammer Creek, at RM 52.3, BLM lands. Elev. 1450'. Shallow small basalt talus piles; common *Rhus diversiloba*, uncommon *Celtus*, grasses. Common *Oreohelix jugalis*; rare *Allogona ptychophora ptychophora*, *Oreohelix vortex*, *Allogona ptychophora solida*, and *Cryptomastix* n. sp. 5. Hand collected in all conditions. 10/13/1993 TF, EJ! [B39]

1313. Southwest flank of Schoolmarm Peak (16). SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 22, T24N R1E, Riggins 1964 quad., Idaho Co. NW-facing cliff base on SE side of Little Salmon River; bluff 0.2 mile S. of USGS gauging station and Salmon River Road (Idaho Co. 1614); on SW flank of Schoolmarm Peak, BLM lands. Elev. 1840'. Area much modified by bulldozing; several junked cars. Schist slope with very small talus piles at base. Mostly grasses and scattered *Opuntia*; open and quite dry. *Oreohelix intersum* rare. Hand collected. 10/14/1993 TF, EJ! [B27]

1314. East of Shorts Bar (17). SW $\frac{1}{4}$  & SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 13, T24N R1E, Riggins 1964 quad., Idaho Co. High N.-facing slope on S. side of Salmon River (River of No Return) at RM 88.8-89.0, E. of Shorts Bar, above Salmon River Road (Idaho Co. 1614), ca. road mile 3.0-3.2, BLM lands. Elev. 1800-1840'. High schist talus; well-vegetated; common mosses, *Seligeria*; rarer *Celtus*, *Ailanthus*, *Cystopteris*, *Draba*, *Rhus diversiloba*. *Cryptomastix mullani clappi*; *Allogona ptychophora ptychophora*; *Oreohelix jugalis* dead only; rare *Oreohelix* n. sp. 15 (dead only). Hand collected. 5/31/1990 TF, EJ, SNI. *Oreohelix* n. sp. 15 rare (all dead); *Cryptomastix mullani clappi* moderately common (full ontogeny); *Allogona ptychophora ptychophora*; *Oreohelix jugalis*. Hand collected. 10/14/1993 TF, EJ! [B29]

1315. Opposite mouths of Dugout and Little Berg Creek (18). SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 13, T24N R1E to NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 18, T24N R2E, Riggins 1964 quad., Idaho Co. Base of N.-facing cliffs opposite mouths of Dugout and Little Berg Creek, S. side of Salmon River (River of No Return) at RM 89.4-89.8, S. of Salmon River Road (Idaho Co. 1614), ca. road mile 3.6-4.0. Elev. 1800-1820'. Bottom of degraded schist cliffs with considerable soils; mostly open; grasses and scattered *Celtus*. Rare speckled *Oreohelix* n. sp. 18; common *Allogona ptychophora ptychophora* and *Cryptomastix mullani clappi* hand collected. 10/20/1989 TF, EJ! Very rare live *Oreohelix* n. sp. 18 (speckled); live *Allogona ptychophora ptychophora* and *Cryptomastix mullani clappi*. Hand collected. 10/14/1993 TF, EJ! [B29]

1316. East of the mouth of Cat Creek (19). NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 20, T24N R2E, Riggins Hot Springs 1964 quad., Idaho Co. NE-facing slope on S. side of Salmon River (River of No Return) at RM 91.7, S. of Salmon River Road (Idaho Co. 1614), ca. 0.3 mile SE of mouth of Cat Creek, BLM lands. Elev. 1840'. Very open sandy slope with scattered talus; dry, open; scattered grasses, *Celtus*. Heavily grazed; common dead *Cryptomastix mullani clappi*, very rare live, in extremely limited areas. Hand collected. 10/14/1993 TF, EJ! [B30]

1317. East of the south end of Lake Creek Bridge (20). NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 21, T24N R2E, Riggins Hot Springs 1964 quad., Idaho Co. Cliff base on S. side of Salmon River (River of No Return) at about RM 92.9-92.95, E. of Lake Creek Bridge on S. side of road up Lake Creek, 0.05-0.1 mile off Salmon River Road (Idaho Co. 1614), BLM lands. Elev. 1800'. Cliff and small talus piles ( friable schist); abundant bryophytes; scattered *Pinus ponderosa*; shrubs; *Draba*. *Oreohelix goniogyra*, *Allogona ptychophora ptychophora*, *Oreohelix* n. sp. 15, and *Cryptomastix mullani clappi* hand collected. 8/11/1989 TF, EJ, SW! Common *Oreohelix goniogyra* (full ontogeny); *Oreohelix* n. sp. 15; *Allogona ptychophora ptychophora*; rarer *Cryptomastix mullani clappi*; collected at cliff base and within a few feet up slope; limited colony, ca. 100' long. Hand collected. 10/14/1993 TF, EJ! [B30]

1318. West of the north end of Lake Creek Bridge (21). SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 21, T24N R2E, Riggins Hot Springs 1964 quad., Idaho Co. S.-facing steep slope 0.1 mile W. of Lake Creek Bridge on N. side of FS9900 off Salmon River Road (Idaho Co. 1614), N. side of Salmon River (River of No Return) at RM 92.9, Nez Perce National Forest. Elev. 1840-1880'. Steep dry open slope with hornblende schist outcrop and limited talus; grasses, common *Celtus*, and *Artemisia*. *Oreohelix jugalis*, *Allogona ptychophora ptychophora*, and *Cryptomastix mullani clappi* hand

collected. 8/11/1989 TF, EJ, SW! Scattered *Oreohelix jugalis*; *Allogona ptychophora ptychophora*; *Cryptomastix mullani clappi*. Hand collected. 10/14/1993 TF, EJ! [B30]

1319. East of the south end of Manning Bridge (22). NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 20, T24N R3E, Kelly Mountain 1964 quad., Idaho Co. N.-facing cliff and talus on S. side of Salmon River Road (Idaho Co. 1614), just E. of Manning Bridge on S. side of Salmon River (River of No Return), BLM lands. Elev. 1920'. Granite cliff and thin talus; comparatively moist; *Sambucus*, *Celtis*, *Pinus ponderosa*, *Abies*, and bryophytes. Snails very rare; *Allogona ptychophora ptychophora* (live adults); *Vitrina alaskana* (not collected); *Cryptomastix mullani clappi* dead only. Hand collected. 10/14/1993 TF, EJ! [B10]

1320. East of Elkhorn Creek (23). SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 21, T24N R3E, Kelly Mountain 1964 quad., Idaho Co. NW-facing shallow slope on S. side of Salmon River Road (Idaho Co. 1614), 0.4 mile E. of Elkhorn Creek, S. of Salmon River (River of No Return), BLM lands. Elev. 1920-1960'. Shallow open sandy slope; *Pinus ponderosa* forest with grasses and *Symphoricarpu*s; scattered granite blocks; rather dry; impacted by forest fire. No snails seen. 10/14/1993 TF, EJ! [B10]

1321. Southwest and opposite Flock Canyon (24). SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 21, T24N R3E, Kelly Mountain 1964 quad., Idaho Co. NW-facing steep slope on S. side of Salmon River Road (Idaho Co. 1614), E. side of unnamed creek mouth, ca. 0.6 mile E. of mouth of Elkhorn Creek, 0.5 mile SW and opposite Flock Canyon, S. of Salmon River (River of No Return), BLM lands. Elev. 2000'. Rather steep schist slope; scattered thin talus; sandy soils; *Pinus ponderosa*; *Abies*; *Symphoricarpu*s; *Ailanthus*; grasses. *Allogona ptychophora ptychophora* and *Cryptomastix mullani clappi* hand collected. 10/14/1993 TF, EJ! [B10]

1322. East and opposite Flock Canyon (25). NE $\frac{1}{4}$  NW $\frac{1}{4}$  & NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 15, T24N R3E, Kelly Mountain 1964 quad., Idaho Co. NW-facing shallow slope on S. side of Salmon River Road (Idaho Co. 1614) at road mile 16.6, opposite but between Gasper Creek and Flock Canyon, S. of Salmon River (River of No Return), BLM lands. Elev. 1940-2000'. Moderate grassy slope with rather scattered schist talus piles with scattered boulders in open, dry *Pinus ponderosa* forest. *Allogona ptychophora ptychophora*, *Vitrina alaskana*, and *Cryptomastix mullani clappi* hand collected. 10/14/1993 TF, EJ! [B10]

1323. West of French Creek (26). SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  & S $\frac{1}{2}$  NW $\frac{1}{4}$  & S $\frac{1}{2}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 13, T24N R3E, Kelly Mountain 1964 quad., Idaho Co. NW-facing steep boulder talus on S. side of Salmon River Road (Idaho Co. 1614) at road mile 18.2, opposite but between Robbin Creek and Smith Canyon, about 0.5 mi. from the mouth of French Creek, S. of Salmon River (River of No Return), BLM lands. Elev. 1920-2080'. Large, open, moss covered, steep granite boulder talus. *Allogona ptychophora ptychophora* (rare, not collected); common *Cryptomastix mullani clappi* hand collected. 10/14/1993 TF, EJ! [B11]

1324. Slope east of Lucile (27). Projected from NW corner; SE $\frac{1}{4}$  NW $\frac{1}{4}$  to SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 2, T24N R1E, Lucile 1963 quad., Idaho Co. Grassy W.-facing slope above (E. of) US95 across from Lucile and S. of Sheep Gulch just N. of Lucile Caves ACEC, E. of the Salmon River at RM 77.0-77.1, BLM lands. Elev. 1720-1800'. Scattered schist boulders and mixed cobbles, small talus piles; moderately steep grassy slope with scattered *Celtis*, common *Opuntia*, rare *Rhus diversiloba*; sandy soil. Common but sporadic *Oreohelix idahoensis idahoensis* (full ontogeny); rare succineid. Colony about 0.2 mile long; extends at least 80' above road. Land snails hand collected. 10/15/1993 TF, EJ! [B17]

1325. Opposite Lucile Post Office (28). NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 2, T24N R1E, Lucile 1963 quad., Idaho Co. Boulders across from Lucile Post Office on E. side of Cow Creek Road (Idaho

Co. 242) in Lucile, E. of Salmon River at RM 76.9. Elev. 1680'. Boulder pile and outcrops (mixed lithologies, mostly limestone) along gravel road; grasses; blackberries; much modified. Abundant *Oreohelix idahoensis idahoensis* (full ontogeny); possible Solem site; much modified by town encroachment. Snails hand collected. 10/15/1993 TF, EJ! [B17]

1326. Wet Gulch South 2 (29). SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 26, T26N R1E, Lucile 1963 quad., Idaho Co. Talus opposite Butcher Bar and E. of US95 just beyond S. end of old US95 segment, ca. 0.3 mile S. of mouth of Wet Gulch, E. side of Salmon River at RM 74.6. Elev. 1640'. Just S. of BLM lands. Schist talus at base of small gully; *Celtus*, grasses. *Oreohelix* n. sp. 23 (full ontogeny); very small colony. Hand collected. 10/15/1993 TF, EJ! [B15]

1327. Wet Gulch South 1 (30). Center NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 26, T26N R1E, Lucile 1963 quad., Idaho Co. SW-facing slope 0.15 mile S. of mouth of Wet Gulch, about 0.1 mile along old US95 segment, E. of present US95 grade, E. of Salmon River at RM 74.35, BLM lands. Elev. 1880'. Very steep, open, and dry schist slope; common bedrock, rare small talus piles; scattered *Celtus*, common *Opuntia* and grasses. Very rare *Oreohelix waltoni* and *Cryptomastix* n. sp. 5 dead only. Hand collected. 10/15/1993 TF, EJ! [B15]

1328. Mouth of Wet Gulch (31). SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 26, T26N R1E, Lucile 1963 quad., Idaho Co. N.-facing slope on S. side of mouth of Wet Gulch E. of US95, ca. 20' outside of N.-S. fence, E. side of Salmon River at RM 74.2. BLM lands. Elev. 1720'. *Celtus* and *Artemisia*, *Balsamorhiza*, grasses, on schist talus; rather open and dry small bench. Common *Oreohelix* n. sp. 24 in very small area (ca. 10' x 10"). Hand collected. 10/15/1993 TF, EJ! [B15]

1329. Wet Gulch North 1 (32). NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  to NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 26, T26N R1E, Lucile 1963 quad., Idaho Co. W.-facing slope and terrace 0.10-0.25 mile NW of mouth of Wet Gulch, E. of US95, E. side of Salmon River at RM 73.85-74.10, BLM lands. Elev. 1720-1780'. Schist talus and bedrock on S. end; boulder terrace to the N. *Oreohelix jugalis* abundant on bedrock at S. end of site; less common above and on terrace; rare *Allogona ptychophora ptychophora* and succineid also found. Hand collected. 10/15/1993 TF, EJ! [B15]

1330. Wet Gulch North 2 (33). NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  to NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 23, T26N R1E, Lucile 1963 quad., Idaho Co. N.-facing steep slope on S. side of unnamed gulch, 0.3 mile N. of Wet Gulch, E. of US95, E. side of Salmon River at RM 73.7, BLM lands. Elev. 1640-1680'. Steep slope with mix of soil, schist talus (very minor) and boulder talus (very minor); snails in talus and high on slope; range open to grassy; common *Rosa*; mosses at slope base. Very rare *Oreohelix haydeni hesperia*, *Allogona ptychophora ptychophora*, and 1 recent dead *Cryptomastix* n. sp. 5. Hand collected. 10/15/1993 TF, EJ! [B15]

1331. Lucile Bridge 2 (34). Projected from NW corner; NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  to SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T25N R1E, Lucile 1963 quad., Idaho Co. NE-facing slope just S. of W. end of Lucile Bridge to 0.1 mile S., colony begins ca. 20' above road off (S. of) Cow Creek Road (Idaho Co. 242), NW side of Salmon River at RM 76.9-77.0. Elev. 1640-1680'. Alluvial slope over schist bedrock; grasses, *Celtus*, *Rhus diversiloba*, and *Ailanthus*. Rare live and recent dead *Oreohelix waltoni* and *Cryptomastix harfordiana* hand collected. 8/11/1989 TF, EJ, SW! Uncommon recent dead and common long-dead *Oreohelix waltoni*; uncommon live and abundant dead *Cryptomastix harfordiana*. Hand collected. 6/2/1990 TF, EJ, SN! Rare live *Cryptomastix harfordiana*; *Oreohelix waltoni* long-dead only, now rare; sheep pasture. Snails hand collected. 10/15/1993 TF, EJ! [B17]

1332. Lucile Bridge 1 (35). Projected from NW corner; SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 2, T25N R1E, Lucile 1963 quad., Idaho Co. NE-facing boulder pile just S. of W. end of Lucile Bridge (for 0.1 mile, below road off (S. of) Cow Creek Road (Idaho Co. 242), NW side of Salmon River at RM

76.9-77.0. Elev. 1580'. Boulder pile (mixed lithologies); steep; mostly open; common *Rhus diversiloba*, *Rosa*, some grasses; scattered *Celtus*. *Oreohelix* n. sp. 23 and *Cryptomastix harfordiana* hand collected. 6/2/1990 TF, EJ, SN! Moderately common *Oreohelix* n. sp. 23; rare *Cryptomastix harfordiana*, and *Helicodiscus salmoneus*. Hand collected. 10/15/1993 TF, EJ! [B17]

1333. South and opposite Upper Sherwin Bar (36). NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 14, T26N R1E, Lucile 1963 quad., Idaho Co. NW-facing schist cliff base, grading into talus to SW, opposite the S. end of Sherwin Bar, E. of US95 at road mile 209.0-209.2, E. side of Salmon River at about RM 71.9-72.0. Elev. 1620-1640'. BLM lands. Very dry and open steep schist slope, scattered talus, some fluvial terrace cobbles; grasses, *Celtus*, *Balsamorhiza*, common *Opuntia*. *Oreohelix jugalis* rare live and *Cryptomastix* n. sp. 5 dead only. Hand collected. 10/16/1993 TF, EJ! *Oreohelix jugalis* dead only. Hand collected. 4/26/1994 TF, EJ! [B14]

1334. Gulch opposite Upper Sherwin Bar (37). SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 13, T26N R1E, Lucile 1963 quad., Idaho Co. N. side of gulch opposite of Upper Sherwin Bar on E. side of US95 at road mile 209.3, E. side of Salmon River at RM 71.7, BLM lands. Elev. 1620-1640'. Schist talus with common river boulders in gulch (NE side); comparatively dry, open; grasses, rare *Celtus*. *Cryptomastix* n. sp. 5 uncommon live; *Oreohelix jugalis* rare; *Allogona ptychophora ptychophora* common dead with rare live (not retained). Hand collected. 10/16/1993 TF, EJ! [B14]

1335. North and opposite Upper Sherwin Bar (38). SE $\frac{1}{4}$  & NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 13, T26N R1E, Lucile 1963 quad., Idaho Co. NW-facing schist cliff and talus opposite of Upper Sherwin Bar E. of US95 at road mile 209.5-209.7, E. side of Salmon River at RM 71.5, BLM lands. Elev. 1660'. Schist bedrock cliff and scattered small talus piles; rather dry and open; *Celtus*, grasses, *Opuntia*, *Artemisia*, *Balsamorhiza*. Moderately common *Oreohelix jugalis* locally (full ontogeny, mostly bandless); rare *Cryptomastix* n. sp. 5; long-dead *Allogona ptychophora ptychophora*. Hand collected. 10/16/1993 TF, EJ! [B14]

1336. Box Canyon North 1 (39). NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 2, T26N R1E, Lucile 1963 quad., Idaho Co. S.-facing cliff N. of US95 at approximately road mile 212.0, N. side of Salmon River at RM 68.8, N. end of Box Canyon, BLM lands. Elev. 1600'. High, nearly S.-facing schist cliff with very rare small talus piles; mostly scattered grasses and *Opuntia*; very dry and exposed. Mostly cliff; modified extensively by road building; very rare *Oreohelix waltoni* live in 12' x 4' talus; very rare live and recent to long-dead *Cryptomastix harfordiana*; long-dead *Allogona ptychophora ptychophora*. Hand collected. 10/16/1993 TF, EJ! [B14]

1337. Box Canyon North 2 (40). NW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 2, T26N R1E, Lucile 1963 quad., Idaho Co. SW-facing gully, and upper slope on N. side of Salmon River and US95, road mile 212.2, near S. end of Blackhawk Bar, N. of Box Canyon at RM 68.5, BLM lands. Elev. 1600-1680'. Open and somewhat dry cliff, gully, and moderate slope; local bedrock exposure (schist) and small-scale talus; locally common *Seligeria*, some moss; *Balsamorhiza*; *Celtus* patches. *Oreohelix* n. sp. 21 and rare *Oreohelix waltoni*, very local (full ontogeny for both); dead *Oreohelix jugalis*; rare *Cryptomastix harfordiana*. All hand collected. 10/16/1993 TF, EJ! [B14]

1338. North of Blackhawk Bar 1 (41). SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 35, T27N R1E, Slate Creek 1981 quad., Idaho Co. NW-facing cliff and gullies at road mile 213.3, N. of Blackhawk Bar, S. side of US95 and Salmon River at RM 67.0, BLM lands. Elev. 1600-1680'. Schist cliff and scattered loose rock (schist), perennially moist, mossy in some areas (abundant moss, less abundant *Seligeria*); common *Celtus*; *Viola*; grasses; sandy soil at base. Rare live Box Canyon *Oreohelix* n. sp. 21; uncommon *Allogona ptychophora ptychophora*; abundant *Cryptomastix harfordiana*; *Oreohelix jugalis* (very rare), and *Deroferas*. Hand collected. 10/16/1993 TF, EJ! [B35]

1339. North of Blackhawk Bar 2 (42). NW $\frac{1}{4}$  & NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 2, T26N R1E, Slate Creek 1981 quad., Idaho Co. N.-facing cliff with small reentrants, S. side of US95 between road mile 213.1-213.2, N. of Blackhawk Bar, S. side of Salmon River at RM 67.1-67.2, BLM lands. Elev. 1600-1640'. Cliff with small steep gullies; mostly exposed bedrock (schist) and sandy soil; fairly open; somewhat moist, with locally common mosses, grasses, *Celtus*. Uncommon *Oreohelix jugalis* (mostly bandless); rare slugs; dead succineid; uncommon *Allogona ptychophora ptychophora*; dead *Cryptomastix* n. sp. 5. Hand collected. 10/16/1993 TF, EJ! [B35]

1340. John Day Creek 4 (43). SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 18, T26N R2E, John Day Mtn. 1963 quad., Idaho Co. S.-facing limestone talus above 2 springs, ca. 2.7 miles up John Day Road (Idaho Co. 460) from US95, N. side of road. Elev. 2440'. Limestone talus ca. 400' in length; mosses; *Sambucus*; grasses; little soil in talus; above 2 cold springs. Common *Oreohelix haydeni hesperia* (full ontogeny); uncommon *Allogona ptychophora ptychophora*; rare live *Cryptomastix mullanii latilabris*, *Discus marmorensis*. Hand collected. 10/17/1993 TF, EJ! [B8]

1341. John Day Creek 5 (44). SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 18, T26N R2E, John Day Mtn. 1963 quad., Idaho Co. Small spring originating at base of talus ca. 2.65 miles up John Day Road (Idaho Co. 460) from US95, N. side of road. Elev. 2440'. Depth 1-3". Small cold spring and spring run with limestone cobbles, scattered *Rorippa*; ca. 10" in width; *Celtus* and *Sambucus* leaves. Common *Pristinicola hemphilli* at source; badly grazed, so snails restricted to spring source. No land snails found. 10/18/1993 TF, EJ! [B8]

1342. John Day Creek 6 (45). SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 18, T26N R2E, John Day Mtn. 1963 quad., Idaho Co. Small spring originating at base of talus ca. 2.7 miles up John Day Road (Idaho Co. 460) from US95, N. side of road Elev. 2440'. Depth 1-3". Small cold spring and spring run with limestone cobbles, scattered *Rorippa*; ca. 12" in width; *Celtus* and deciduous leaves. Common *Pristinicola hemphilli* at spring source hand collected off rocks and leaves; area badly grazed. No land snails found. 10/17/1993 TF, EJ! [B8]

1343. John Day Creek 7 (46). NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 18, T26N R2E, John Day Mtn. 1963 quad., Idaho Co. Talus on N. side of John Day Road (Idaho Co. 460), ca. 2.8 miles up from US95 and 0.1 mile E. of two cold springs (across small gully just E. of mouth). Elev. 2440'. Roughly 0.3 road mile NE of the type locality for *Oreohelix haydeni hesperia*. Thin and narrow limestone talus overshadowed by *Celtus*; grassy at base; bryophytes common in some areas; talus length <200'. Uncommon *Discus marmorensis* (half albino); rare live *Allogona ptychophora ptychophora* and dead *Cryptomastix mullanii latilabris* (not retained); uncommon *Oreohelix haydeni hesperia*. Hand collected. 10/17/1993 TF, EJ! [B8]

1344. John Day Creek 8 (47). SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 20, T26N R2E, John Day Mtn. 1963 quad., Idaho Co. S.-facing large talus in prominent reentrant on N. side of John Day Creek and John Day Road (Idaho Co. 460), ca. 0.75 mile SE of Trevino ranch house and opposite cabin. Elev. 2880-2920'. Large forested schist boulder talus; *Pinus ponderosa*, *Rosa*, abundant mosses, *Cornus stolonifera*; open in places; length ca. 750'. Common *Discus marmorensis* and *Cryptomastix mullanii latilabris*; very rare *Oreohelix haydeni hesperia* (mostly dead); uncommon *Allogona ptychophora ptychophora*; rare slugs. All hand collected. 10/17/1993 TF, EJ! [B8]

1345. John Day Creek 9 (48). NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 20, SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 21 and NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 28, T26N R2E, John Day Mtn. 1963 quad., Idaho Co. Long SW-facing partly wooded slope above John Day Creek, beginning ca. 1.6 miles SE from Trevino ranch house and ending ca. 0.6 mile SE above John Day Road (Idaho Co. 460), BLM lands. Elev. 3280-3440'. Open, partly wooded, moderately steep to steep slope and small cliffs, very rare rock piles; dolomitic limestone; *Pinus ponderosa* (scattered); grasses; *Balsamorhiza*. Area partly burned; moderately grazed. *Oreohelix haydeni hesperia* (small form?) common long-dead and quite rare live, surviving only in small

groups in protected areas; uncommon long-dead *Cryptomastix mullani olneyae*; rare live *Allogona ptychophora ptychophora*. Hand collected. 10/17/1993 TF, EJ! [B8]

1346. Mouth of Long Gulch (49). NW $\frac{1}{4}$  & NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 1, T26N R1E, Lucile 1963 quad., Idaho Co. Mouth of Long Gulch on both sides (E. and W.-facing slopes), E. side of Salmon River, BLM lands. Elev. 1600-1640'. Steep slopes and thin schist talus, exposed bedrock; spring at base on W. side; mostly dry open; grasses, *Balsamorhiza*, *Artemisia* and *Celtus*. *Oreohelix jugalis* (full ontogeny) moderately common in a limited area (mostly in small gullies on both sides of Long Gulch, especially under *Artemisia*); rare live *Allogona ptychophora ptychophora* (common dead). Hand collected. Area heavily pastured. 10/16/1993 TF, EJ! [B14]

1347. Opposite Squaw Bar (50). NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 14 to W $\frac{1}{2}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 13, T25N R1E, Lucile 1963 quad., Idaho Co. High, steep W.-facing slope, above (NE of) US95; E. side of Salmon River at ca. RM 78.9-79.1, opposite Squaw Bar, BLM lands. Elev. 1800-2000'. Steep slope; mostly grasses, scattered schist cobbles. No land snails seen, area heavily grazed. 10/18/1993 TF, EJ! [B17]

1348. Crawford Creek 1 (51). NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 11 to SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 12, T25N R1E, Lucile 1963 quad., Idaho Co. N. and S.-facing slopes along Crawford Creek above (E. of) access road, beginning ca. 0.3 road mile E. of US95. Elev. 1960-2360'. Steep slopes and stream bed; range from dry and open (grasses, *Celtus*, *Opuntia*, *Balsamorhiza*) to moist mossy cliff faces and shrubby slope (still mostly grasses); very common *Rhus diversiloba*. Very scattered *Allogona ptychophora ptychophora* (live); long-dead *Oreohelix idahoensis idahoensis*; heavy grazing damage. Snails hand collected. 10/18/1993 TF, EJ! [B17]

1349. Lucile Caves ACEC-Crawford Creek 2 (52). SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$ , SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$ , NW $\frac{1}{4}$  SW $\frac{1}{4}$ , & NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  of SW $\frac{1}{4}$  sec. 12, T25N R1E, Lucile 1963 quad., Idaho Co. NW and SW-facing slopes along tributary gully on N. side of Crawford Creek, beginning ca. 0.4 road mile E. of US95 along access road, BLM lands (Lucile Caves ACEC). Elev. 2200-2600'. Relatively dry and open grassy steep slopes in tributary gully; grasses, *Opuntia*, *Balsamorhiza*, *Celtus*, common *Rhus diversiloba*; scattered schist boulders and small rock piles. Heavily grazed area. Scattered colonies of *Oreohelix idahoensis idahoensis*, especially on SW side; locally common where protected from grazing (very steep areas); *Cryptomastix* n. sp. 5. Hand collected. 10/18/1993 TF, EJ! [B17]

1350. Crawford Creek 3 (53). Center NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  of SE $\frac{1}{4}$  sec. 11, T25N R1E, Lucile 1963 quad., Idaho Co. Small S.-facing talus on N. side of Crawford Creek ca. 0.25 road mile E. of US95, between two major gullies on N. side of Crawford Creek. Elev. 2020'. Small (ca. 15' length) limestone talus on N.-side of small gully; very open; grasses, *Clematis*, *Celtus*. Uncommon *Oreohelix idahoensis idahoensis* hand collected. 10/18/1993 TF, EJ! [B17]

1351. Lucile Caves ACEC-Crawford Creek 4 (54). SW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$ , NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$ , SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$ , SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$ , NW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  of SE $\frac{1}{4}$  sec. 11, T25N R1E, Lucile 1963 quad., Idaho Co. E. and W.-facing slopes in a large gully on N. side of Crawford Creek, beginning ca. 0.25 road mile NE of US95 (E. of Salmon River), partly on BLM lands (Lucile Caves ACEC). Elev. 2000-2400'. Dry open slope along dry gully; schist boulder talus at base; grasses; *Opuntia*; *Celtus*; common *Rhus diversiloba*. Rare live *Cryptomastix* n. sp. 5, *Allogona ptychophora ptychophora*; scattered *Oreohelix idahoensis idahoensis* (some live, but most dead); hand collected. 10/18/1993 TF, EJ! [B17]

1352. *Artemisia* slope on south end of Lucile Caves ACEC (55). NW $\frac{1}{4}$  NW $\frac{1}{4}$ , NE $\frac{1}{4}$  NW $\frac{1}{4}$ , SE $\frac{1}{4}$  NW $\frac{1}{4}$ , SW $\frac{1}{4}$ , NW $\frac{1}{4}$ , NW $\frac{1}{4}$  SW $\frac{1}{4}$ , NE $\frac{1}{4}$  SW $\frac{1}{4}$  of SE $\frac{1}{4}$  sec. 11, T25N R1E, Lucile 1963 quad., Idaho Co. Extensive steep SW-facing slope above grassy bench, S. part of BLM Lucile Caves ACEC, E. of

US95 and Salmon River; length ca. 0.3 mile; width ca. 0.2 mile. Elev. 2000-2400'. Steep slope with limestone bedrock, scattered talus and boulders; grassy soil with *Celtus*, common large *Artemisia*, *Opuntia*, *Balsamorhiza*; rather dry and open. Very abundant dead *Oreohelix idahoensis idahoensis*; relatively common scattered live. Hand collected. Area formerly grazed; some grazing continuing. 10/18/1993 TF, EJ! [B17]

1353. Squaw Creek 1 (56). NW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  of SE $\frac{1}{4}$  sec. 14, T24N R1W, Kessler Creek 1964 quad., Idaho Co. E.-facing slope on both sides of Squaw Creek Road (FS487) 0.1 road mile W. of junction with Indian Springs Road (FS9901), E. side of Squaw Creek, ca. 1.25 road miles into Nez Perce National Forest. Elev. 3800-3820'. Limestone talus slope; *Pinus ponderosa* with common deciduous shrubs. Common live to long-dead *Oreohelix strigosa* n. subsp. 1; uncommon *Cryptomastix mullani olneyae*, *Allogona ptychophora ptychophora* and *Anguispira kochi occidentalis*. Hand collected. 10/19/1993 TF, EJ! [B12]

1354. Squaw Creek 2 (57). SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 13, T24N R1W, Kessler Creek 1964 quad., Idaho Co. S.-facing talus 0.5 road mile inside Nez Perce National Forest boundary, N. side of Squaw Creek Road (FS487), 0.9 road mile E. of Indian Springs Road (FS9901), N. side of Squaw Creek. Elev. 3440'. Unstable very dry basalt talus above road; mostly open, with grasses, rare *Celtus* and *Balsamorhiza*. Single long-dead specimen of *Oreohelix* n. sp. 8; hand collected. 10/19/1993 TF, EJ! [B12]

1355. Squaw Creek 3 (58). SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 13, T24N R1W, Kessler Creek 1964 quad., Idaho Co. S.-facing talus above and below Squaw Creek Road (FS487) just W. of (inside) Nez Perce National Forest boundary, 1.3 road miles E. of Indian Springs Road (FS9901), N. side of Squaw Creek. Elev. 3260'. Very dry unstable basalt talus slope with grasses, few *Celtus*. Long-dead specimens of new *Oreohelix* n. sp. 8; 1 live *Allogona ptychophora ptychophora*; recent dead *Cryptomastix mullani olneyae*. Hand collected. 10/19/1993 TF, EJ! [B12]

1356. South side of the mouth of Twilegar Gulch (59). NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 35, T26N R1E, Lucile 1963 quad., Idaho Co. N.-facing schist outcrops with considerable soil on S. side of mouth of Twilegar Gulch, E. of US95 and Salmon River opposite mouth of China Creek. Elev. 1720'. Schist outcrops at mouth of gully; mossy locally; abundant grasses, common *Celtus*. Uncommon *Oreohelix* n. sp. 20; very few live; *Cryptomastix* n. sp. 5 live, recent and long-dead; *Helicodiscus* live and dead. Hand collected. 10/19/1993 TF, EJ! [B15]

1357. 8.6 miles up Twilegar Gulch Road (60). NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 31, T26N R2E, John Day Mtn. 1963 quad., Idaho Co. N.-facing small cliffs (above road) and talus (below road) 8.4-8.6 road miles up Twilegar Gulch Road, above Wet Gulch, BLM lands. Elev. 5640'. Short cliff and talus; *Pinus ponderosa* forest below; cleared and burned above. *Oreohelix haydeni hesperia*, *Anguispira kochi occidentalis*, *Allogona lombardii*, and *Cryptomastix mullani olneyae*. Hand collected. 10/1/1990 TF, GH! Common *Oreohelix haydeni hesperia* (full ontogeny); *Anguispira kochi occidentalis*; *Cryptomastix mullani olneyae*, *Allogona lombardii*. Hand collected. 10/19/1993 TF, EJ! [B9]

1358. 8.0 miles up Twilegar Gulch Road (61). SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 31, T26N R2E, Lucile 1963 quad., Idaho Co. Slope 8.0 road miles along Twilegar Gulch Road., above Wet Gulch; collected above road. BLM lands. Elev. 5360'. Low-moderate slope and thin limestone talus; cleared *Pinus ponderosa* forest. Snails live mostly along road; dead in clear cut; *Oreohelix haydeni hesperia* hand collected. 10/19/1993 TF, EJ! [B16]

1359. 7.6 miles up Twilegar Gulch Road (62). SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 31, T26N R2E, Lucile 1963 quad., Idaho Co. N.-facing shallow limestone slope 7.6 road miles up Twilegar Gulch

Road, BLM lands. Elev. 5120'. Cut-over limestone slope; *Pinus ponderosa* forest. Dead *Oreohelix haydeni hesperia* only; hand collected. 10/19/1993 TF, EJ! [B16]

1360. 7.0 miles up Twilegar Gulch Road (63). NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 36, T26N R1E, Lucile 1963 quad., Idaho Co. N.-facing shallow slope on a low hill 7.0 road miles up Twilegar Gulch Road on N. side, Idaho State lands. Elev. 4820-4860'. Low hill in an open *Pinus ponderosa* forest (mostly cut-over); limestone substrate. *Oreohelix haydeni hesperia*, dead only (not collected). Snails essentially extinct in cut-over area. 10/19/1993 TF, EJ! [B16]

1361. 2.3 miles up Twilegar Gulch Road (64). SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 35, T26N R1E, Lucile 1963 quad., Idaho Co. E.-facing slope on knob 2.3 road miles up Twilegar Gulch Road on N. side, directly above Twilegar Gulch. Elev. 2600-2640'. Limestone outcrops, dry slope on an *Artemisia* covered knob. *Oreohelix* n. sp. 20 found in all conditions (mostly dead). Dead only at top of knob; live only where protected by small cliffs or talus; heavily grazed. Hand collected. 10/19/1993 TF, EJ! [B15]

1362. North side of Skookumchuck Creek (65). SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 3, T27N R1E, Slate Creek 1981 quad., Idaho Co. S.-facing slope near the mouth of Skookumchuck Creek (N. side), 0.35 mile up Dairy Mountain Road (FS2025) from US95, E. of the Salmon River, BLM lands. Elev. 1580'. Dry, exposed grassy slope; replanted, probably *Artemisia* scrub originally; alluvial substrate. No snails found. 10/20/1993 TF, EJ! [B33]

1363. North of mouth of Skookumchuck Creek (66). NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 3, T27N R1E, Slate Creek 1981 quad., Idaho Co. Small gully on E. side of Dairy Mountain Road (FS2025), about 0.1 road mile from US95, N. of mouth of Skookumchuck Creek, E. of the Salmon River at RM 58.1, BLM lands. Elev. 1560-1600'. Small gully collected on N. side; partly forested, with *Celtus*, *Astragalus*, *Rosa*; basalt bedrock with thin soil. *Allogona ptychophora ptychophora*, rather rare. Hand collected. 10/20/1993 TF, EJ! [B33]

1364. Opposite mouth of Deer Creek (67). NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 3, T27N R1E, Slate Creek 1981 quad., Idaho Co. W.-facing talus on E. side of side road to US95, E. side of Salmon River at RM 57.4, opposite mouth of Deer Creek, BLM lands. Elev. 1520-1560'. Loose open basalt talus; dry, shallow; mostly grasses, scattered *Celtus* and *Artemisia*. *Oreohelix jugalis*, *Allogona ptychophora ptychophora*, and *Cryptomastix* hand collected. 10/20/1993 TF, EJ! [B32]

1365. Opposite and south of mouth of Sotin Creek (68). NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 34, T28N R1E, Slate Creek 1981 quad., Idaho Co. W.-facing talus opposite and S. of mouth of Sotin Creek on E. side of side road to US95, E. side of Salmon River RM 56.8, BLM lands. Elev. 1560'. Basalt boulder talus (dry); very little vegetation. Recent dead *Cryptomastix* n. sp. 5, not collected. 10/20/1993 TF, EJ! [B32]

1366. Mouth of Robbers Gulch (69). SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 14, T27N R1E, Slate Creek 1981 quad., Idaho Co. Both sides of mouth of Robbers Gulch above bridge crossing of old US95 route (N. side), N. of Salmon River at Horseshoe Bend, RM 62.9, BLM lands. Elev. 1760-1800'. Small disturbed basalt taluses, *Rhus diversiloba* common; some *Celtus*, grasses; generally very dry, open. *Oreohelix vortex*, sparse *Cryptomastix* n. sp. 5; rare dead *Allogona ptychophora ptychophora*; area partly quarried; snails under talus in protected areas. Hand collected. 10/20/1993 TF, EJ! [B33]

1367. West of Robbers Gulch (70). N $\frac{1}{2}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 14, T27N R1E, Slate Creek 1981 quad., Idaho Co. S.-facing talus 0.1 mile W. of Robbers Gulch, N. side of old US95 route, N. of Salmon River at Horseshoe Bend, RM 62.8, BLM lands. Elev. 1800'. Open dry talus basalt talus base in less disturbed areas in small quarry around a large *Populus*; understory of grasses, small

*Salix*, little bit of *Rhus diversiloba*. Sparse *Oreohelix vortex* and *Cryptomastix* n. sp. 5. Hand collected. 10/20/1993 TF, EJ! [B33]

1368. Opposite Slate Creek Emergency Airport (71). NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 23, T27N R1E, Slate Creek 1981 quad., Idaho Co. W.-facing slope opposite Slate Creek Emergency Airport from US95 (along N. side of old US95 route), N. of Salmon River at Horseshoe Bend, BLM lands. Elev. 1600-1620'. Dry, open, grassy slope; alluvial substrate. No snails. 10/20/1993 TF, EJ! [B33]

1369. Lucile Caves ACEC-second site south of Sheep Gulch (72). SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  to SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 2, T25N R1E, Lucile 1963 quad., Idaho Co. Shallow-moderately steep W.-facing slope in Lucile Caves ACEC (BLM lands), ca. 0.3 mi. S. of Lucile turnoff, above US95 (E. side). Elev. 1800-2600'. Moderately steep-shallow weathered schist slope with scattered limestone cobbles and boulders; mostly dry and open; grasses, scattered *Celtus*, *Artemisia*, *Balsamorhiza*, *Opuntia*. Very sparse live and dead *Oreohelix idahoensis idahoensis* hand collected; rather heavily grazed. Live material very local. 10/21/1993 TF, EJ! [B17]

1370. Lucile Caves ACEC-south of Lucile Caves (73). NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  to NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  to SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  to NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 11, T25N R1E, Lucile 1963 quad., Idaho Co. Large W.-facing slope partly in Lucile Caves ACEC (BLM lands), ca. 0.7-1.1 mi. S. of Lucile turnoff and E. of US95, and S. of Lucile Caves. Elev. 1800-2600'. Steep-moderately steep slope, open, dry, and grassy, in weathered limestone; scattered outcrops and blocks. Very sparse *Oreohelix idahoensis idahoensis* live; common long-dead; moderately grazed. Hand collected. 10/21/1993 TF, EJ! [B17]

1371. Lucile Caves ACEC-north site along roadbed (74). NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 11, T25N R1E, Lucile 1963 quad., Idaho Co. W.-facing schist slope near N. end of old roadbed of US95, ca. 0.6 mi. S. of Lucile turnoff, Lucile Caves ACEC (BLM lands), near old mine prospect. Elev. 1720-1800'. Dry and open slope, with weathered schist outcrops; common grasses, *Celtus*; locally shaded, with *Rubrus*, *Salix*, etc. *Oreohelix idahoensis idahoensis* hand collected. 8/10/1989 TF, MF, EJ! Local but common *Oreohelix idahoensis idahoensis* hand collected. Litter sampled. 10/21/1993 TF, EJ! [B17]

1372. Lucile Caves ACEC-second site from north on old roadbed (75). SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 11, T25N R1E, Lucile 1963 quad., Idaho Co. W.-facing springy area below Lucile Caves and ca. 0.65 mi. S. of Lucile turnoff, Lucile Caves ACEC (BLM lands), ca. 0.1 mi. S. of N. end of old US95 roadbed. Elev. 1720-1760'. Shaded, moist slope with spring runs, travertine deposition; *Salix*, *Populus*, *Physocarpus*, *Cornus stolonifera*, *Sambucus*. Uncommon *Cryptomastix* n. sp. 5 live; *Oreohelix idahoensis idahoensis* long-dead (not retained); *Allogona ptychophora ptychophora* dead only. Hand collected. 8/10/1989 TF, MF, EJ [B17]

1373. Lucile Caves ACEC-near Lucile Caves (76). Center SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 11, T25N R1E, Lucile 1963 quad., Idaho Co. Steep W.-facing travertine-covered area in vicinity of Lucile Caves and below largest spring source, ca. 0.2 mi. E. of US95 and 0.7 mi. S. of Lucile turnoff, BLM lands (Lucile Caves ACEC). Elev. 1960-2020'. Very steep, travertine-covered; open, mostly very moist; grasses, scattered bryophytes, local shrubs. Uncommon *Allogona ptychophora ptychophora* live; rare long-dead *Oreohelix idahoensis idahoensis*. Hand collected. 8/10/1989 TF, MF, EJ! [B17]

1374. Lucile Caves ACEC-cave 1.25 miles south of Lucile (77). SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 11, T25N R1E, Lucile 1963 quad., Idaho Co. Small cave opening to E. of US95, Lucile Caves ACEC (BLM lands), ca. 1.25 mi. S. of Lucile turnoff. Elev. 1680'. Small cave (former mine prospect?) in

short limestone cliff; bare rock, grasses, scattered limestone cobbles and boulders, very limited talus. *Oreohelix idahoensis idahoensis* extremely local, common where found. Hand collected. 8/10/1989 TF, MF, EJ! [B17]

1375. Pine Bar Campground 1 (78). SW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> sec. 33, T30N R1E, Fenn 1963 quad., Idaho Co. SW-facing basalt talus just E. of Pine Bar Campground (at end of access road) above Pine Bar Rapids, N. side of Salmon River, RM 42.7, BLM lands. Elev. 1360'. Basalt talus; mostly dry and open; *Celtis*, *Sambucus*, *Opuntia*, grasses. *Oreohelix* n. sp. 25; *Cryptomastix* n. sp. 6; *Allogona ptychophora ptychophora* (full ontogeny for all); hand collections. 10/23/1993 TF, EJ! [B4]

1376. Pine Bar Campground 2 (79). SE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> sec. 33, T30N R1E, Fenn 1963 quad., Idaho Co. S.-facing basalt talus on N. side of Pine Bar Campground (N. of upper access road), 0.25 mile E. of mouth of Cottonwood Gulch, N. of the Salmon River, down river from Pine Bar Rapids, RM 42.4, BLM lands. Elev. 1400'. Low, dry, and open basalt talus; snails at base; *Celtis*, grasses. Uncommon-locally abundant *Oreohelix* n. sp. 25; *Allogona ptychophora solida*; *Cryptomastix* n. sp. 6. 10/23/1993 TF, EJ! [B4]

1377. West of the mouth of Cottonwood Gulch (80). NW<sub>1/4</sub> NE<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 33, T30N R1E, Fenn 1963 quad., Idaho Co. S.-facing basalt cliffs and talus 0.3 mile W. of mouth of Cottonwood Gulch, N. of access road, N. of the Salmon River down river of Pine Bar Rapids, RM 41.9, BLM lands. Elev. 1360'. Steep talus in small piles at back of short basalt cliff; some rare *Celtis*; grasses; quite dry and open. Rare *Oreohelix* n. sp. 25; *Allogona ptychophora ptychophora*; *Cryptomastix* n. sp. 6. 10/23/1993 TF, EJ! [B4]

1378. Southeast of the mouth of Gill Gulch (81). NW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> sec. 32, T30N R1E, Fenn 1963 quad., Idaho Co. SW-facing small, deep and moist gully 0.5 mile SE of mouth of Gill Gulch and on N. side of access road, N. side of Salmon River at RM 41.4, BLM lands. Elev. 1440-1480'. Deep gully; basalt talus ranging from very dry-moist and mossy; *Celtis*; *Echinopsis*; grasses. Collected on both sides; rare live *Oreohelix* n. sp. 25; rare live *Cryptomastix* n. sp. 6; *Allogona ptychophora solida*. All hand collected. 10/23/1993 TF, EJ! [B4]

1379. Murdicks Spring (82). NW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> sec. 31, T30N R1E, Fenn 1963 quad., Idaho Co. Murdicks Spring at the mouth of Pine Tree Gulch, N. of access road, N. side of Salmon River at RM 40.2. Elev. 1360'. Destroyed dry spring. Basalt talus (S.-facing) above spring covered by dead *Rubrus*. Spring heavily modified; *Rubrus* probably herbicided and partially removed. No mollusks (land or freshwater) found. 10/23/1993 TF, EJ! [B4]

1380. Bug Slope (83). SW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> & SW<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> sec. 25, T30N R1E, Moughmer Point 1963 quad., Idaho Co. Bug Slope (E.-facing) ca. 0.4 road mile from Rocky Canyon junction N. side of access road, N. side of Salmon River at RM 38.6, BLM lands. Elev. 1200-1240'. Steep, very dry extensive basalt talus; some mosses; *Celtis*; *Ailanthus*; grasses; rare small *Rhus diversiloba*. *Allogona ptychophora solida*, *Cryptomastix* n. sp. 3, and abundant dead-uncommon live *Oreohelix* n. sp. 25. Hand collected. 10/23/1993 TF, EJ! [B23]

1381. Mouth of Maple Canyon (84). SE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 26, T30N R1E, Moughmer Point 1963 quad., Idaho Co. E.-facing talus on W. side of the mouth of Maple Canyon just S. of access road, S. side of Salmon River at RM 36.3, BLM lands. Elev. 1340'. Basalt talus; moist; mossy; abundant grasses; *Echinopsis*. Rare *Allogona ptychophora solida*. Hand collected. 10/23/1993 TF, EJ! [B22]

1382. Mouth of Andrews Canyon (85). N<sub>1/2</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> sec. 26, T30N R1E, Moughmer Point 1963 quad., Idaho Co. N. and S.-facing taluses at mouth of Andrews Canyon just S. of

access road, S. side of Salmon River at RM 36.5, BLM lands. Elev. 1320'. Steep basalt talus on both sides of mouth of canyon; very mossy to W., dry to E. No live snails; very rare dead *Allogona ptychophora* (not retained). Hand collection. 10/23/1993 TF, EJ! [B22]

1383. Talus northeast of Andrews Canyon (86). NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 26, T30N R1E, Moughmer Point 1963 quad., Idaho Co. NW-facing small scattered talus along the S. side of access road, 0.4 road mile NE of the mouth of Andrews Canyon, on S. side of Salmon River at RM 36.8, BLM lands. Elev. 1320'. Shallow scanty basalt talus; mossy in places; *Celtus*; grasses. Very rare large *Oreohelix* n. sp. 29; *Allogona ptychophora solida*; *Cryptomastix* n. sp. 6 and dead only n. sp. 3. Hand collected. 10/23/1993 TF, EJ! [B22]

1384. South of Weis Rock Shelter (87). SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 8, T30N R1E, Fenn 1963 quad., Idaho Co. High cliff and E.-facing talus just S. of Weis Rock Shelter, W. of Grave Creek and Grave Creek Road, 0.6 road mile up Grave Creek from its junction with Rock Creek. Elev. 1900'. Moist basalt talus (seeps were trickling down nearby cliff) with abundant mosses, *Urtica* and *Echinopsis* under locust. Abundant *Cryptomastix* (1 species, including rare dead-only *populi*); uncommon *Oreohelix* n. sp. 25; *Allogona ptychophora solida*. Hand collected. 10/23/1993 TF, EJ! [B3]

1385. 1.3 miles Northeast of China Creek (88). SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 28, T31N R3W, Rattlesnake Ridge 1963 quad., Nez Perce Co. SE-facing shallow slope below Eagle Creek access road (E. side), 1.3 road miles NE of mouth of China Creek, W. side of Salmon River at RM 12.5, BLM lands. Elev. 1040'. Small basalt rock piles beneath road; *Celtus*; open and exposed; sandy soil. *Allogona ptychophora solida*, *Oreohelix* n. sp. 29, and *Cryptomastix populi*. Hand collected. 10/24/1993 TF, EJ! [B25]

1386. 0.5 mile Northeast of China Creek (89). SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 32, T31N R3W, Rattlesnake Ridge 1963 quad., Nez Perce Co. Shallow slope below Eagle Creek access road (E. side), 0.5 road mile NE of mouth of China Creek, just above high water mark, W. side of Salmon River at RM 11.7, BLM lands. Elev. 1040'. Basalt talus just above high water mark; *Celtus*; grasses; driftwood; *Rhus diversiloba*; open and dry. Uncommon *Oreohelix* n. sp. 29; rare *Allogona ptychophora solida*; dead *Cryptomastix populi*. Hand collected. 10/24/1993 TF, EJ! [B25]

1387. 0.2 mile Northeast of China Creek (90). W $\frac{1}{2}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 5, T30N R3W, Rattlesnake Ridge 1963 quad., Nez Perce Co. E.-facing shallow slope below Eagle Creek access road (E. side), 0.2 road mile NE of mouth of China Creek, just above high water mark, W. side of Salmon River at RM 11.3, BLM lands. Elev. 1040'. Small basalt rock piles; open and exposed; *Celtus* in vicinity; sandy soil. *Cryptomastix populi*, *Allogona ptychophora solida*, and rare *Oreohelix* sp. 29 hand collected. 10/24/1993 TF, EJ! [B25]

1388. Idaho. Clearwater R.-Snake R.-Columbia R. Slopes on small creek at McAllister Trailhead, N. side of ID14, N. of the South Fork Clearwater River, ca. 7.0 mi. SE of Grangeville, Nez Perce National Forest. Heavily vegetated steep-sided slopes on a small creek. Moist *Pinus ponderosa* forest with a strong deciduous understory. *Allogona lombardii*, *Hemphillia*, *Allogona kochi occidentalis*, *Radiodiscus abietum* and *Cryptomastix* sp. hand collected. 10/22/1993 TF, EJ!

1389. Opposite Smith Canyon (92). SW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 14, T24N R3E, Kelly Mountain 1964 quad., Idaho Co. N.-facing slope opposite mouth of Smith Canyon, ca. 0.9 mile W. of French Creek, S. side of Salmon River Road (FS1614), S. of the Salmon River (River of No Return), BLM lands. Elev. 1960'. Shallow, rather dry *Pinus ponderosa* forest; Slope with poor understory, strongly coniferous litter; granite-derived sandy soil. No snails seen. 10/14/1993 TF, EJ! [B11]

1390. French Creek 1 (93). NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 25, T24N R3E, Kelly Mountain 1964 quad., Idaho Co. W.-facing slope to the E. of French Creek Road (FS246), ca. 1.85 miles S. of junction with Salmon River Road, S. of the Salmon River (River of No Return), BLM lands. Elev. 2640'. *Pinus ponderosa* forest with scattered granite boulders; thin litter; rich bryophyte flora and moderate understory. Long dead *Allogona ptychophora ptychophora* seen, not collected. No snails seen in litter. 10/14/1993 TF, EJ! [B11]

1391. Race Creek 1 (94). Center NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 10, T24N R1E, Riggins 1964 quad., Idaho Co. N.-facing schist talus, S. side of Race Creek just W. of mouth and 0.25 mile W., E. of horse pasture. Elev. 1800-2000'. Greenish schist talus; steep, grassy, some moss, some exposed bedrock; moist; above high water mark of creek. *Oreohelix strigosa goniogrypha* (type locality *fide* Solem), moderately common; most submature. Solem collected closer to road; Baker to the W., in area now heavily pastured (snails now extinct there). Snails hand collected. 5/31/1990 TF, EJ, SN! [B27]

1392. North of Race Creek (95). SE $\frac{1}{4}$  SE $\frac{1}{4}$  & NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  & SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 10, T24N R1E, Riggins 1964 quad., Idaho Co. SE-facing slope just N. of the mouth of Race Creek canyon and above (W. of) US95 for about 0.25 mile NE, W. of the Salmon River at RM 84.5-84.7. Elev. 1900-1960'. Limestone and alluvial rather shallow slope; dry, open, heavily modified; recent fire; *Artemisia* scrub. Recent to long-dead *Cryptomastix mullani olneyae*; uncommon large *Oreohelix idahoensis idahoensis*. Hand collected. 5/31/1990 TF, EJ, SN! [B27]

1393. Race Creek 2 (96). SW $\frac{1}{4}$  & NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 3, T24N R1E, Riggins 1964 quad., Idaho Co. N. side of Race Creek Road (Idaho Co. 241); first major gully from mouth collected on E. side. Elev. 1880-2040'. Steep, open, dry gully with limestone outcrops on E. side and schist on opposite side. *Artemisia* scrub throughout. Small *Oreohelix idahoensis idahoensis* colony; snails mostly around limestone outcrops; schist on opposite side of gully. Hand collected. 10/19/1989 TF, MF, EJ! [B27]

1394. Northwest-facing slope at Salmon River RM 79.6-79.8 (97). SW $\frac{1}{4}$  & NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 23, T25N R1E, Riggins 1964 quad., Idaho Co. N. to NW-facing slope above present gold mine and 1/8 mile to NE above US95 (SE of), opposite RM 79.6-79.8, E. of Salmon River, BLM lands. Elev. 1760-1800'. Grassy, rocky, rather open steep slope with a weak talus. *Cryptomastix* n. sp. 5 and *Oreohelix* n. sp. 23 hand collected. 8/10/89 TF, MF, EJ! Common large *Oreohelix* n. sp. 23; rarer *Cryptomastix* n. sp. 5. Both hand collected. 5/31/1990 TF, EJ, SN! [B26]

1395. White Bird Canyon opposite Baker Gulch (98). SW $\frac{1}{4}$  SE $\frac{1}{4}$ , SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 22, T28N R1E, White Bird 1962 quad., Idaho Co. SE-facing talus on NW side of White Bird Creek, SW of the mouth of Baker Gulch. Elev. 1600-1640'. Partly grassy, mostly dry, open, *Artemisia* scrub hillside with basalt taluses. Basalt talus partly damaged by old road and by grazing. Common *Oreohelix* n. sp. 25, less common *Oreohelix vortex*, *Cryptomastix mullani olneyae*, and *Allogona ptychophora ptychophora*. All hand collected. 9/30/1990 TF, EJ! [B39]

1396. Base of Banner Ridge in White Bird Canyon (99). NE $\frac{1}{4}$  NW $\frac{1}{4}$  & NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 22, T28N R1E, White Bird 1962 quad., Idaho Co. N.-facing slope at the base of Banner Ridge in White Bird Canyon just S. of White Bird Road, ca. 0.28 mile E. of mouth of White Bird Creek, and 0.2 road miles from Lyons Bar turnoff. Elev. 1480-1500'. Wooded slope with exposed basalt bedrock; small talus piles; moist, small seeps; *Salix*, *Cornus stolonifera*, some common forbs, and *Urtica*. *Oreohelix* n. sp. 25, *Allogona ptychophora ptychophora*, and rare dead *Oreohelix waltoni*. Hand collected. 8/11/1989 TF, EJ, SW! Abundant *Oreohelix* n. sp. 25, common *Polygyrella*, *Allogona ptychophora ptychophora*, rare dead *Oreohelix waltoni*. Hand collected. 10/21/1989 TF, EJ! Site almost totally destroyed by road widening. A few surviving

*Oreohelix* n. sp. 25 and *Allogona ptychophora ptychophora* locally; no *Oreohelix waltoni* seen.  
10/12/1993 TF, EJ! [B39]

1397. Talus North of Copperville (100). NW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub>, W<sub>1/2</sub> SE<sub>1/4</sub> & SE<sub>1/4</sub> NE<sub>1/4</sub> NE<sub>1/4</sub> sec. 21, T28N R1E, White Bird 1962 quad., Idaho Co. E.-facing prominent talus above Hammer Creek Road, on N. edge of Copperville, W. of the Salmon River at about RM 53.2; collected N. for ca. 800'. Elev. 1560-1600'. Base of very steep and large open basalt talus; abundant lichens, moss, some *Seligeria*; *Celtus* at base. *Cryptomastix* n. sp. 5, *Allogona ptychophora solida* and *Oreohelix jugalis* in limited area on E. side of talus at base. 10/5/1990 TF, GH! [B39]

1398. South of Hammer Creek Recreation Area (101). SW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> sec. 16, T28N R1E, White Bird 1962 quad., Idaho Co. Gully and E.-facing talus just above Hammer Creek Road, ca. 0.25 road mile S. of turnoff to Hammer Creek Recreation Area, W. of the Salmon River at RM 53.0. Elev. 1600-1640'. Gully and steep, unstable, open basalt talus; seepy at base with common nettles. Road cuts into talus; basalt talus over alluvial/fluvial terrace. *Allogona ptychophora solida* and *Cryptomastix* n. sp. 5 hand collected. 10/21/1989 TF, EJ! [B39]

1399. Opposite White Bird Elementary School (102). SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> sec. 14, T28N R1E, White Bird 1962 quad., Idaho Co. E.-facing talus and outcrops directly opposite White Bird Elementary School. Elev. 1600-1640'. Basalt talus and outcrops; range from open to tree-covered (deciduous); common nettles. *Cryptomastix mullani olneyae*, *Oreohelix vortex*, *Oreohelix* n. sp. 25, *Allogona ptychophora ptychophora*, and *Polygyrella polygyrella*. Hand collected. 8/11/1989 TF, EJ, SW. *Oreohelix* n. sp. 25, *Cryptomastix mullani olneyae*, *Allogona ptychophora ptychophora*, *Oreohelix vortex*, and *Polygyrella* hand collected. 10/21/1989 TF, EJ! Abundant *Oreohelix* n. sp. 25; common *Cryptomastix mullani olneyae*, *Allogona ptychophora ptychophora*; rare *Oreohelix vortex*; some *Polygyrella polygyrella*. Hand collected. 6/1/1990 TF, EJ, SN! *Oreohelix* n. sp. 25 abundant; common *Cryptomastix mullani olneyae*, *Allogona ptychophora ptychophora*; uncommon *Oreohelix vortex*; some *Polygyrella polygyrella*. Hand collected. 6/17/1993 TF, EJ! [B39]

1400. North of White Bird Elementary School (103). NE<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> & SW<sub>1/4</sub> NW SE<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> sec. 14, T28N R1E, White Bird 1962 quad., Idaho Co. Steep bluff and talus, ca. 400' NNW of White Bird Elementary School and W. of old US95. Elev. 1600'. Shallow mossy (somewhat trashy) basalt talus at base of steep bluff; partly forested, moist; common *Urtica*, deciduous trees, raspberries. Presumed *Oreohelix vortex* site of Berry; claimed type locality. *Allogona ptychophora ptychophora*, *Cryptomastix mullani olneyae*, *Oreohelix vortex*; rarer *Oreohelix* n. sp. 25, and *Polygyrella polygyrella*. Hand collected. 6/17/1993 TF, EJ! Common *Cryptomastix mullani olneyae*, *Oreohelix vortex*; rarer *Oreohelix* n. sp. 25, and *Polygyrella polygyrella*. Hand collected. 10/13/1993 TF, EJ! [B39]

1401. North of White Bird Creek 2 (104). NE<sub>1/4</sub> SW<sub>1/4</sub> & SW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 22, T28N R1E, White Bird 1962 quad., Idaho Co. SW-facing steep talus slope E. of Lyons Bar access road, ca. 0.4 mile N. of mouth of White Bird Creek, E. side of Salmon River. Elev. 1480-1520'. Steep basalt talus slope; *Artemisia* scrub with rare *Celtus*; talus mostly open. Common *Oreohelix jugalis* and *Cryptomastix* n. sp. 6 hand collected. 9/30/1990 TF, GH! [B39]

1402. Below Giants Nose (105). SE<sub>1/4</sub> NE<sub>1/4</sub> & NW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> sec. 15, T28N R1E, White Bird 1962 quad., Idaho Co. W.-facing talus E. of Lyons Bar access road at base of Giants Nose, E. side of Salmon River at RM 52.7. Elev. 1440'. Dry, open, partly steep basalt talus; grassy; surrounding vegetation *Artemisia* scrub. Common *Oreohelix jugalis*. Hand collected. 9/30/1990 TF, GH! [B39]

1403. Soards Gulch (106). SW<sub>1/4</sub> NW<sub>1/4</sub> & NW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> sec. 10, T28N R1E, White Bird 1962 quad., Idaho Co. Taluses (N.- and S.-facing) to the E. of Lyons Bar access road on both sides of Soards Gulch, above (E. of) Salmon River at RM 51.3, BLM lands. Elev. 1480-1500'. Metamorphic-granodiorite talus; thin, low, dry, open; grasses, *Artemisia* scrub above; scattered *Celtus*, common *Rhus diversiloba* locally. Abundant *Oreohelix vortex*; small *Cryptomastix harfordiana*; *Allogona ptychophora ptychophora* and some *Oreohelix jugalis*. Hand collected. 6/1/1990 TF, EJ, SN! [B38]

1404. Owens Gulch (107). NE<sub>1/4</sub> SE<sub>1/4</sub> & SE<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> sec. 3, T28N R1E, White Bird 1962 quad., Idaho Co. W.-facing talus to the E. of Lyons Bar access road on N. side of Owens Gulch, E. of Salmon River at RM 50.5, BLM lands. Elev. 1480'. Schistose phyllite, shallow talus; part washout from gulch, part glacial-accentuated talus; open, dry; grasses, scattered *Celtus*, *Rhus diversiloba*; *Artemisia* scrub above. Common *Cryptomastix harfordiana*, *Oreohelix* n. sp. 25, and *Allogona ptychophora ptychophora*. Hand collected. 6/1/1990 TF, EJ, SN! [B38]

1405. Lyons Bar South (108). E<sub>1/2</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 3, T28N R1E & E<sub>1/2</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> sec. 34, T29N R1E, White Bird 1962 quad., Idaho Co. W.-facing shallow talus, ca. 0.2 mile S. of S. end, Lyons Bar, above (E. of) Lyons Bar access road, E. of Salmon River at RM 49.8, BLM lands. Elev. 1440-1480'. Shallow metasedimentary talus; dry, open; some grasses, *Rhus diversiloba*, *Celtus*. *Oreohelix* n. sp. 25, *Cryptomastix harfordiana*, and *Allogona ptychophora ptychophora* hand collected. 9/30/1990 TF, GH! [B38]

1406. Lyons Bar North (109). W<sub>1/2</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> to W<sub>1/2</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> sec. 34, T29N R1E, White Bird 1962 quad., Idaho Co. W.-facing talus E. of Lyons Bar access road from Lyons Bar, N. almost to Shut-in Canyon (0.3 miles), E. of Salmon River, RM 49.0-49.3, BLM lands. Elev. 1480-1520'. Red phyllite outcrops and talus; varies from open to forested; dry to N., moist to S.; *Celtus*, shrubs. Common odd bandless *Oreohelix vortex*?; *Oreohelix jugalis*; *Cryptomastix* n. sp. 5 and *Allogona ptychophora ptychophora*. Hand collected. 6/1/1990 TF, EJ, SN! Common odd bandless *Oreohelix vortex*?; *Oreohelix jugalis*; *Cryptomastix* n. sp. 5 and *Allogona ptychophora ptychophora*. Hand collected. 9/30/1990 TF, GH! [B38]

1407. Squaw Creek 9 (110). Center W<sub>1/2</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> sec. 21, T24N R1E, Riggins 1964 quad., Idaho Co. S.-facing talus 0.2 mile up Seven Devils Road (FS517) from junction with US95 on N. side; above irrigation channel, W. of Little Salmon River. Elev. 1860'. Very dry, open basalt talus and alluvium; talus in minor gullies; *Artemisia* scrub with scattered grasses; very local mosses and *Seligeria*. *Oreohelix intersum* hand collected. 10/3/1990 TF, GH! Rare *Oreohelix intersum* (medium-sized form). Hand collected. 5/31/1990 TF, EJ, SN! [B28]

1408. Opposite mouth of Captain John Creek (111). SE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 28, T24N R1E, Riggins 1964 quad., Idaho Co. E.-facing talus W. of US95, ca. road mile 192.9 and opposite mouth of Captain John Creek, W. of Little Salmon River at RM 2.6. Elev. 1940'. Edge (outside) of BLM lands. Moderate-scale basalt talus at base of series of small gullies; mostly open talus but common moss and *Seligeria*, *Rhus diversiloba*, lichens. *Oreohelix intersum* hand collected. 10/2/1990 TF, GH! Uncommon typical (medium-sized) *Oreohelix intersum*. Hand collected. 5/31/1990 TF, EJ, SN! [B28]

1409. Opposite and north of Captain John Creek (112). NW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 28, T24N R1E, Riggins 1964 quad., Idaho Co. S.-facing talus N. of US95 at road mile 192.4, base of steep slope and above irrigation channel near pump house, opposite and N. of Captain John Creek, W. of Little Salmon River at RM 2.1. Elev. 1880'. Large-scale basalt talus; grassy; mostly open; occasional *Rhus diversiloba*. *Oreohelix intersum* (medium-sized) uncommon. Collected by hand. 5/31/1990 TF, EJ, SN! [B28]

1410. Opposite Cooper Bar (118). W $\frac{1}{2}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 26, T28N R1E, Slate Creek 1981 quad., Idaho Co. W. to N.-facing shallow talus on S. side of mouth of small gully on E. side of US95, opposite Cooper Bar, E. of Salmon River, RM 55.8, BLM lands. Elev. 1520-1560'. Basalt talus slope at mouth of small gully, very little vegetation; some moss; open and comparatively dry. Common small *Cryptomastix* n. sp. 5 and *Oreohelix vortex* in talus. Hand collected. 10/5/1990 TF, GH! [B32]

1411. North of McKinzie Creek (119). NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 24, T27N R1E, Slate Creek 1981 quad., Idaho Co. SW-facing basalt talus on old US95, ca. 0.2 mile N. of mouth of McKinzie Creek, NE of the Salmon River at Horseshoe Bend, RM 63.3-63.4. Elev. 1560'. Rather thin basalt talus; mostly dry, open; grasses. Moderately common *Oreohelix vortex*; partly disturbed by road building and road closure (bulldozing). Land snails hand collected. 10/5/1990 TF, GH! [B33]

1412. McKinzie Creek 1 (120). NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 24, T27N R1E, Slate Creek 1981 quad., Idaho Co. S.-facing talus ca. 0.2 mile up McKinzie Creek Road, on N. side of creek, N. of the Horseshoe Bend of the Salmon River. Elev. 1720-1760'. Low, open basalt talus; common *Celtus*; some *Rhus diversiloba*; generally dry. Moderately common *Oreohelix vortex*; rarer *Allogona ptychophora* *ptychophora* and *Cryptomastix* n. sp. 5. Hand collected. 10/5/1990 TF, GH! [B33]

1413. South of McKinzie Creek (121). W $\frac{1}{2}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 24, T27N R1E, Slate Creek 1981 quad., Idaho Co. W.-facing talus above (SE of) old US95, ca. 0.3 mile S. of McKinzie Creek and 0.1 mile N. of the mouth of Slippy Creek, SE side of the Salmon River at Horseshoe Bend, RM 63.5, BLM lands. Elev. 1600-1620'. Dry, open basalt talus with almost no vegetation. Limited talus; most bladed smooth. Uncommon *Oreohelix vortex* and *Cryptomastix* n. sp. 5 in remaining talus. Hand collected. 10/5/1990 TF, GH! [B33]

1414. South bridge of US95 at Horseshoe Bend (117). Center NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 23, T27N R1E, Slate Creek 1981 quad., Idaho Co. SE-facing boulder pile beneath S. bridge of US95 (road mile 216.5) at Horseshoe Bend on N. side of the Salmon River at RM 64.3. Elev. 1560'. Boulder pile (fluvial, mixed lithologies) over basalt bedrock; open, dry; some grasses; above high water mark. Uncommon *Oreohelix jugalis*; common dead only on outcrop to SW. Hand collected. 10/28/1989 TF, MF, EJ! [B33]

1415. Opposite Russell Bar 1 (122). SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 23, T27N R1E, Slate Creek 1981 quad., Idaho Co. N.-facing slope ca. 0.5 mile W. of US95 bridge on S. side of Horseshoe Bend Road, opposite E. end of Russell Bar, S. side of Salmon River, RM 61.8. Elev. 1640-1680'. Moist partly wooded slope on W. side of gully. No land snails found. 8/10/1989 TF, MF, EJ! [B33]

1416. Opposite Russell Bar 2 (123). SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  & NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 22, T27N R1E, Slate Creek 1981 quad., Idaho Co. N.-facing slope ca. 1.2 miles W. of US95 bridge on S. side of Horseshoe Bend Road, opposite center of Russell Bar, S. side of Salmon River at RM 61.4-61.5, BLM lands. Elev. 1640-1680'. Moderate slope, mostly grassy; on basalt; rather moist. Area heavily grazed. No snails despite moisture. Hand collection attempted. 8/10/1989 TF, MF, EJ! [B33]

1417. Opposite Russell Bar 3 (124). SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 22, T27N R1E, Slate Creek 1981 quad., Idaho Co. NE-facing slope ca. 1.6 miles W. from US95 bridge on S. side of Horseshoe Bend Road, opposite W. end of Russell Bar, S. side of Salmon River RM 61.2, BLM lands. Elev. 1520'. Rocky (basalt) slope and short cliff; very moist and mossy. Road construction impact. No snails. Hand collection attempted. 8/10/1989 TF, MF, EJ! [B33]

1418. Grave Creek 1 (125). NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 30, T31N R1E, Fenn 1963 quad., Idaho Co. S.-facing talus at first (upper most) crossing of Grave Creek by Grave Creek Road, W. of road and N. side of creek. Elev. 3080-3120'. Basalt talus; rather dry except basally; scattered *Celtus* and forbs locally. Uncommon *Cryptomastix populi*; one *Oreohelix* n. sp. 25? (immature); *Allogona ptychophora solida*. Hand collected. 4/24/1994 TF, EJ! [B3]

1419. Grave Creek 2 (126). NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 29, T31N R1E, Fenn 1963 quad., Idaho Co. Unnamed spring N. of Grave Creek, N. side of Grave Creek Road, just over 0.3 road mile W. of Hanley Gulch, N. of Grave Creek. Elev. 2920'. Depth 0-2". Spring not indicated on USGS map. Common *Rorippa*, mosses in spring runs; several coalescing spring runs with basalt cobbles; grassy and seepy, with *Equisetum* stands; at sources, *Angelica* and *Celtus*. *Allogona ptychophora solida*, *Cryptomastix mullani olneyae*, and *Vertigo concinna* hand collected. 10/23/1990 TF! Common *Allogona ptychophora solida*; common *Cryptomastix mullani olneyae*; 1 *Deroceras* sp. *Physella* and sphaeriids in spring. 4/24/1994 TF, EJ! [B3]

1420. West side of White Bird Creek bridge (196). N $\frac{1}{2}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 22, T28N R1E, White Bird 1982 quad., Idaho Co. S.-facing talus slope and exposures above White Bird Creek just W. of bridge and above Lyons Bar access road. Elev. 520'. Basalt exposures and small talus piles; mostly grasses with scattered *Celtus*; mostly open and dry. Uncommon *Oreohelix vortex*; grazing impact. Hand collected. 10/5/1990 TF, GH! [B39]

1421. Time Zone Rapids South (128). E $\frac{1}{2}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T24N R1E, Riggins 1964 quad., Idaho Co. W.-facing slope on E. side of Salmon River S. of Time Zone Rapids at RM 84.2, BLM lands. Elev. 1720-1740'. Scattered garnet and hornblende schist talus with rare *Cystopteris fragilis*, some *Celtus*, rare *Lupinus*, and mosses. *Cryptomastix* n. sp. 5 rare scattered in individual taluses. Heavily pastured; probably very dry. Hand collected. 4/25/1994 TF, EJ! [B27]

1422. Time Zone Rapids North (129). SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 2, T24N R1E, Riggins 1964 quad., Idaho Co. W.-facing slope, E. side of Salmon River N. of Time Zone Rapids just E. of Riggins Bridge (US95), RM 84.1, BLM lands. Elev. 1720-1800'. Scattered garnet and hornblende schist taluses, rather shallow with *Celtus*, *Cystopteris fragilis*, *Lupinus*. Live *Cryptomastix* n. sp. 5, two long dead *Oreohelix idahoensis idahoensis*. Hand collected. 4/25/1994 TF, EJ! [B27]

1423. Opposite Lightning Creek South (130). NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 35, T25N R1E, Riggins 1964 quad., Idaho Co. E.-facing talus at mouth and S. of prominent gully on W. side of Salmon River at about RM 83.0, opposite and south of Lightning Creek, BLM lands. Elev. 1760'. Shallow schist (with quartz and tourmaline) talus with abundant *Rhus diversiloba*, some *Celtus*, grasses, *Pinus ponderosa* forest above and below with scattered boulders. Probably very dry in summer. Site grazed. Uncommon *Oreohelix* n. sp. 21 and *Cryptomastix harfordiana*. Hand collection. 4/25/1994 TF, EJ! [B26]

1424. Opposite Lightning Creek North (131). W $\frac{1}{2}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 35, T25N R1E, Riggins 1964 quad., Idaho Co. E.-facing talus below S. major gully almost directly opposite Lightning Creek on W. side of Salmon River at RM 82.9, BLM lands. Elev. 1760'. Dry schist talus, rather shallow, with abundant *Rhus diversiloba*; open *Pinus ponderosa* forest. Rare *Oreohelix* n. sp. 21 and *Allogona ptychophora ptychophora*; common *Cryptomastix harfordiana*. Hand collected. 4/25/1994 TF, EJ, RM! [B26]

1425. Opposite Chair Creek (132). SE $\frac{1}{4}$  NW $\frac{1}{4}$  & SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 26, T25N R1E, Riggins 1964 quad., Idaho Co. NE-facing taluses on W. side of Salmon River at Chair Creek Rapids, RM 81.8-81.9, opposite Chair Creek, BLM lands. Elev. 1760-1800'. Thin schist talus; fairly mossy; common *Rhus diversiloba*, moderately common *Celtus*, *Cystopteris*; fairly open.

*Oreohelix* n. sp. 23, *Allogona ptychophora ptychophora*, and *Cryptomastix harfordiana* hand collected. 4/25/1994 TF, EJ! [B26]

1426. Fiddle Creek Rapids (133).  $E\frac{1}{2} SE\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 22, T25N R1E, Riggins 1964 quad., Idaho Co. E.-facing talus slope on W. side of Salmon River between Ladder Creek and Clarks Creek at Fiddle Creek Rapids, RM 80.5, BLM lands. Elev. 1680'. Large schist boulder talus with *Rhus diversiloba*, *Celtis*, *Cystopteris*, and rare *Seligeria*; probably rather dry. Uncommon *Allogona ptychophora solida*; *Cryptomastix* n. sp. 5; *Helicodiscus salmoneus*. Hand collected. 4/25/1994 TF, EJ! [B26]

1427. Opposite Lucile ACEC (134). NW $\frac{1}{4}$ , NE $\frac{1}{4}$  & SE $\frac{1}{4}$  of SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 11, T25N R1E, Lucile 1963 quad., Idaho Co. NE-facing limestone slope on W. side of Salmon River opposite BLM ACEC, RM 78.2, BLM lands. Elev. 1640-1680'. Blue limestone boulders piles at and above high water level with *Celtis*, *Artemisia*, mosses, grasses; small limestone basal talus and scattered small rock piles with *Artemisia*. *Oreohelix jugalis* on lower slope above high-water mark, *Oreohelix* n. sp. 20 found higher up. *Cryptomastix* n. sp. 5 in talus to mid-height (rare). Hand collected. 4/25/1994 TF, EJ, RM! [B17]

1428. Upper Butcher Bar (135). W $\frac{1}{2}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 35, T26N R1E, Lucile 1963 quad., Idaho Co. E.-facing hillside on W. side of Salmon River at Upper Butcher Bar, RM 75.3, BLM lands. Elev. 1680'. Dry exposed hillside, mixed phyllite and limestone with schist to the N.; *Artemisia*, rare *Opuntia*; grasses. Uncommon *Oreohelix waltoni* in small rock piles; *Oreohelix jugalis* uncommon on lower slope. Hand collected. 4/26/1994 TF, EJ, RM! [B15]

1429. North of Butcher Bar (136). NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  & SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 26, T26N R1E, Lucile 1963 quad., Idaho Co. NE-facing slope on W. side of Salmon River, N. of Butcher Bar, opposite Wet Gulch, RM 74.1-74.2, BLM lands. Elev. 1600-1680'. Rocky slope (schistose metasedimentary lithology) with small talus piles; *Artemisia*, *Balsamorhiza*, *Opuntia*, *Seligeria*, and *Cystopteris* on N. side. *Oreohelix waltoni* found higher up the hill in small draw; *Oreohelix jugalis*, *Cryptomastix harfordiana*, and rare *Helicodiscus salmoneus* throughout the site. Hand collected. 4/26/1994 TF, EJ, RM! [B15]

1430. Opposite John Day Creek (137). SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 14, T26N R1E, Lucile 1963 quad., Idaho Co. SE-facing slope on W. side of Salmon River at RM 72.5, opposite John Day Creek.. Elev. 1640-1680'. Slope with pegmatite bedrock; fair amount of *Artemisia* with *Seligeria*, *Opuntia*, sparse grasses; dry, very open. Common *Oreohelix jugalis*, rare *Cryptomastix* n. sp. 6. Hand collected. Heavily grazed. 4/26/1994 TF, EJ, RM! [B14]

1431. Below Upper Sherwin Bar (138). SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 13, T26N R1E, Lucile 1963 quad., Idaho Co. SE-facing slope and cliffs on W. side of Salmon River at RM 71.3, ca. 0.25 mile below (S. of) Upper Sherwin Bar. BLM lands. Elev. 1600-1680'. Pegmatite outcrops and thin talus; rather dry; talus with *Celtis*, *Opuntia*; some *Seligeria*. Live-dead *Oreohelix jugalis* and long-dead *Cryptomastix* n. sp. 6. Hand collected. 4/26/1994 TF, EJ! [B14]

1432. Opposite Blackhawk Bar (139). NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 2, T26N R1E, Lucile 1963 quad., Idaho Co. NE-facing slope on W. side of Salmon River, opposite Blackhawk Bar, RM 68.3. Elev. 1560'. Metasedimentary shallow talus, mostly large; *Seligeria*, *Cheilanthes*, and *Cystopteris*. Abundant *Allogona ptychophora ptychophora* (small); some *Cryptomastix* n. sp. 6; 1 specimen of *Oreohelix jugalis*. Hand collected. 4/26/1994 TF, EJ! [B14]

1433. Opposite Slate Creek Rest Area (140). E $\frac{1}{2}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 26, T27N R1E, Slate Creek 1981 quad., Idaho Co. E.-facing talus slope on W. side of Salmon River, opposite Slate Creek rest area, RM 65.4, BLM lands. Elev. 1560'. Rather dry and steep basalt talus with

*Artemisia*, *Cryptomastix* n. sp. 6 and *Oreohelix vortex*. Hand collected. 4/26/1994 TF, EJ!  
[B35]

1434. Above mouth of Sotin Creek (141). SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 34, T28N R1E, Slate Creek 1981 quad., Idaho Co. SE-facing slope on W. side of Salmon River above mouth of Sotin Creek, RM 56.8, BLM lands. Elev. 1480'. Steep basalt talus with common *Celtus*; dry, mostly large cobbles, composite, unstable locally. Uncommon *Oreohelix* n. sp. 25; *Allogona ptychophora ptychophora*; *Cryptomastix* n. sp. 6; *Helicodiscus salmoneus*; *Pupilla hebes*; *Vallonia*; *Cochlicopa lubrica* generally beneath *Celtus* in small stable taluses only. Hand collected. 4/26/1994 TF, EJ! [B32]

1435. South of Woodruff Gulch (143). W $\frac{1}{2}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 23, T29N R1E, White Bird 1962 quad., Idaho Co. W.-facing talus slope S. of Woodruff Gulch on E. side of Salmon River, RM 46.7, BLM lands. Elev. 1460-1480'. Basalt (red) talus slope; thin, dry; *Rosa*, *Rubrus*, *Rhus diversiloba*, *Opuntia*, and *Artemisia*. *Oreohelix vortex* and *Cryptomastix harfordiana* abundant; *Pupilla hebes*; *Allogona ptychophora ptychophora*; *Helicodiscus salmoneus*. Hand collected. 4/27/1994 TF, EJ! [B37]

1436. North of Woodruff Gulch (144). NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 23, T29N R1E, White Bird 1962 quad., Idaho Co. W.-facing slope and cliffs N. of Woodruff Gulch on E. side of Salmon River, RM 46.6, BLM lands. Elev. 1440'. Exposed red basalt knobs and thin talus; dry, open, grassy, moist at base; *Rhus diversiloba*, *Celtus*, and *Artemisia*. *Oreohelix jugalis* and *Cryptomastix* n. sp. 6 uncommon; rare *Allogona ptychophora ptychophora*. Hand collected. 4/27/1994 TF, EJ, RM!

[B37]

1437. South and opposite mouth of Sheep Creek (145). SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 11, T29N R1E, White Bird 1962 quad., Idaho Co. NE-facing taluses opposite of and 0.25 mile S. of mouth of Sheep Gulch on SW side of Salmon River, RM 45.2, BLM lands. Elev. 1480'. Red rhyolitic basalt taluses about 80' above river with *Rhus diversiloba*; diverse bryophyte flora; *Sorbus*; *Artemisia*. Uncommon *Oreohelix* n. sp. 25; common *Cryptomastix* n. sp. 6 and *Allogona ptychophora ptychophora*. Hand collected. 4/27/1994 TF, EJ! [B37]

1438. North of the mouth of Hells Gate Creek (146). NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 11, T29N R1E, Fenn 1963 quad., Idaho Co. E.- and NE-facing talus slope below (N. of) mouth of Hells Gate Creek on W. side of Salmon River, RM 43.2, BLM lands. Elev. 1640'. Metamorphic basalt talus, common *Rhus diversiloba*; *Artemisia*; *Seligeria*; *Cystopteris*; dry, exposed. *Oreohelix jugalis*, *Oreohelix* n. sp. 25, *Cryptomastix* n. sp. 6, *Allogona ptychophora ptychophora*, and abundant *Helicodiscus salmoneus*. Hand collected. 4/27/1994 TF, EJ!

[B4]

1439. Below and east of Devils Garden (147). SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 31, T30N R1E, Moughmer Point 1963 quad., Idaho Co. N.-facing talus slope on S. side of Salmon River below and E. of Devils Garden, RM 39.8, BLM lands. Elev. 1340'. Moist basalt talus with *Rhus diversiloba*; *Celtus*; *Prunus*; bryophytes; probably dry in summer. *Allogona ptychophora solida*, *Oreohelix* n. sp. 25, *Cryptomastix* n. sp. 3, 6, and *olneyae*. Hand collected. 4/27/1994 TF, EJ!

[B23]

1440. North of the mouth of Second Creek (148). NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 22, T30N R1W, Moughmer Point 1963 quad., Idaho Co. E.-facing talus slope N. (downstream) of the mouth of Second Creek on W. side of Salmon River at RM 35.3, BLM lands. Elev. 1280'. Dry large cobble-boulder taluses with *Rhus diversiloba*, some mosses, *Seligeria*, large *Artemisia*. Uncommon *Oreohelix* n. sp. 25, common *Allogona ptychophora solida*; uncommon *Cryptomastix olneyae* and n. sp. 6. Hand collected. 4/27/1994 TF, EJ! [B22]

1441. Below Packers Creek (149). NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 10, T30N R1W, Moughmer Point 1963 quad., Idaho Co. W.-facing talus slope on E. side of Salmon River at RM 32.8, ca. 0.5 mile downstream from mouth of Packer Creek, BLM lands. Elev. 1280'. Steep basalt talus slope; common *Celtus*, scattered *Balsamorhiza*, *Rhus diversiloba*, *Sorbus*; rather dry and open, but some *Seligeria*, mosses, *Cystopteris*. Common *Cryptomastix populi*; rare *Oreohelix* n. sp. 25; rare *Allogona ptychophora ptychophora*. Hand collected. 4/27/1994 TF, EJ! [B21]
1442. Skookumchuck Creek 2 (150). NW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 6, T27N R2E, Slate Creek 1981 quad., Idaho Co. S.-facing talus on N. side of Skookumchuck Creek, N. side of Dairy Mountain Road (FS2025), ca. 0.3 mile SE of Dairy Mountain Road turnoff (junction with Delmadge Ridge Road). Elev. 2040'. Comparatively dry basalt talus, but abundant *Rhus diversiloba* and scattered *Celtus*, *Prunus*, grasses, other shrubs. Abundant *Oreohelix* n. sp. 25; common *Cryptomastix* n. sp. 5; uncommon *Oreohelix* n. sp. 32; uncommon *Allogona ptychophora ptychophora*. Hand collected. 4/24/1994 TF, EJ! [B34]
1443. Skookumchuck Creek 3 (151). S<sub>1/2</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 5, T27N R2E, McKinzie Creek 1963 quad., Idaho Co. S.-facing talus on N. side of Skookumchuck Creek, N. side of Delmadge Ridge Road (FS2025), 1.0-1.3 miles from Dairy Mountain Road turnoff (junction with Dairy Mountain Road) just before stiff sharp turn in road. Elev. 2400'. Very steep basalt talus with *Celtus* locally. Common *Oreohelix* n. sp. 25; uncommon *Allogona ptychophora ptychophora*; common *Cryptomastix* n. sp. 6. Hand collected. 4/25/1994 TF, EJ! [B18]
1444. Squaw Creek 4 (152). SE<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> sec. 14, T24N R1W, Kessler Creek 1964 quad., Idaho Co. SE-facing talus N. of Squaw Creek Road (FS487) 0.1 mile E. of junction with Indian Springs Road (FS9901), N. of Squaw Creek, Nez Perce National Forest. Elev. 3800'. Forested (*Pinus ponderosa*, second growth). Limestone substrate. Uncommon large *Oreohelix strigosa* n. subsp. 1; rare *Allogona ptychophora ptychophora*, *Cryptomastix mullani mullani*. Hand collection. 4/26/1994 TF, EJ! [B12]
1445. Squaw Creek 5 (153). Center NW<sub>1/4</sub> sec. 18, T24N R1E, Kessler Creek 1964 quad., Idaho Co. SE-facing talus slope above Squaw Creek Road (FS487), ca. 2.0 miles E. of intersection with Indian Springs Road (FS9901), N. of Squaw Creek, BLM lands. Elev. 3080'. Steep unstable basalt talus; rather open, dry; some grasses, *Sorbus*, rare *Celtus*. No land snails seen. 4/26/1994 TF, EJ! [B12]
1446. Squaw Creek 6 (154). NW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 18, T24N R1E, Kessler Creek 1964 quad., Idaho Co. SE-facing talus slope above Squaw Creek Road (FS487), ca. 2.0 miles E. of intersection with Indian Springs (FS9901), N. of Squaw Creek, partly or entirely on BLM lands. Elev. 3040'. Steep unstable basalt talus; rather open, dry; some grasses, *Sorbus*, rare *Celtus*. No land snails seen. 4/26/1994 TF, EJ! [B12]
1447. Squaw Creek 7 (155). SW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> sec. 7, T24N R1E, Kessler Creek 1964 quad., Idaho Co. SE-facing shallow slope on N. side of Squaw Creek Road (FS487), ca. 2.8 miles from junction with Indian Springs Road (FS9901), N. of Squaw Creek. Elev. 2880'. Open dry grassy slope with scattered small basalt talus piles; abundant grasses, some *Celtus*. No land snails seen. 4/26/1994 TF, EJ! [B12]
1448. Squaw Creek 8 (156). SW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> sec. 8, T24N R1E, Riggins 1964 quad., Idaho Co. Shallow S.-facing slope 0.8 mile W. up Squaw Creek Road (FS487) from Seven Devils Road (FS517) turnoff, N. side, N. of Squaw Creek. Elev. 2760'. Open shallow dry grassy slope with small basalt taluses in scattered piles; abundant grasses, rare *Celtus*, some *Rhus diversiloba*.

*Oreohelix* n. sp. 8 very rare live, rare dead; *Cryptomastix mullani olneyae*. Hand collected. 4/26/1994 TF, EJ! [B28]

1449. Below mouth of Telcher Creek (157). NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 4, T30N R1W, Moughmer Point 1963 quad., Idaho Co. SW-facing talus slope below mouth of Telcher Creek on NE side of Salmon River at RM 31.1, BLM lands. Elev. 1200-1240'. Metasedimentary (nephrite) shallow taluses, fairly exposed; common *Prunus*, *Celtis*, *Rhus diversiloba*, and *Rosa*. *Cryptomastix populi*, *Allogona ptychophora solida*, and *Oreohelix* n. sp. 25. Hand collected. 4/28/1994 TF, EJ! [B21]

1450. Below and opposite mouth of Telcher Creek (158). NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 4, T30N R1W, Moughmer Point 1963 quad., Idaho Co. NE-facing talus slope below and opposite mouth of Telcher Creek on W. side of unnamed gully, S. side of Salmon River at RM 30.8, BLM lands. Elev. 1240-1280'. Nephrite talus with large cobble-boulders. Largely exposed and open, but common *Celtis* and bryophytes, ninebark, *Prunus* locally. Common *Cryptomastix populi*; very rare *Oreohelix* n. sp. 25 (not collected); common *Allogona ptychophora solida*; *Helicodiscus salmoneus*; rare *Euconulus fulvus alaskensis*; *Cryptomastix* n. sp. 6. Hand collected. 4/28/1994 TF, EJ! [B21]

1451. Left Fork Knox Canyon 2. Zone 12: 362,970E 4,706,700N. NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 1, T11S R32E, Bannock Peak quad., Power Co., Idaho. Knox Cr.-Bannock Cr.-Snake R.-Columbia R., Deep Creek Mountains. Unnamed spring on W. side of Left Fork of Knox Canyon, W. of Knox Canyon Road. Elev. 5760'. Spring now piped completely; no mollusks. 5/14/1993 TF, EJ!

1452. Knox Canyon. Zone 12: 363,420E 4,707,130N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 35, T10S R32E, Bannock Peak 1971 quad., Power Co., Idaho. Knox Cr.-Bannock Cr.-Snake R.-Columbia R., Deep Creek Mountains, Knox Canyon. S.-facing rocky slope on N. side of Knox Canyon Road, ca. 0.3 mi. NE of Left Fork/Right Fork Knox Canyon junction, Knox Canyon. Elev. 5640'. Dry lightly forested shallow rocky slope; shallow soil with limestone clasts. Common large *Oreohelix "strigosa depressa"*. Moderately grazed. Hand collections. 05/14/1993 TF, EJ!

1453. Spring opposite Cove Power Plant-2. Zone 12: 433,930E 4,706,990N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 32, T10S R40E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gentile Valley. Unnamed spring W. of Gentile Valley Road, about 0.5 mi. W. of Cove Power Plant. Elev. 4980'. Depth 2-16". Medium-sized impacted, impounded cold spring pond with abundant *Lemna*, *Rorippa*, epiphytic algae. *Physella* only, not collected. Modified; agriculture-impacted and grazing. 9/5/1993 TF, EJ!

1454. Tilden Bridge spring 2. Zone 12: 376,760E 4,775,780N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 30, T3S R34E, Rockford quad., Bingham Co., Idaho. Snake R.-Columbia R. Unnamed spring on N. side of Snake River, 0.1 mi. W. of Tilden Bridge (Ferry Butte Road), 2nd spring W. of Tilden Bridge Fishing Access boat ramp, opposite Ferry Butte, about RM 750.2. Elev. 4410'. Depth 0-4". Rocky, shallow cold spring run; shaded; some trees; scattered *Rorippa*. No snails, for no obvious reason. Spring just above Snake R. high water mark. Hand collections. 5/14/1993 TF, EJ!

1455. Tilden Bridge spring 3. Zone 12: 376,720E 4,775,720N. NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 30, T3S R34E, Rockford quad., Bingham Co., Idaho. Snake R.-Columbia R. Unnamed spring on N. side of Snake River, 0.2 mi. W. of Tilden Bridge (Ferry Butte Road), 3rd spring W. of Tilden Bridge Fishing Access boat ramp, opposite Ferry Butte, about RM 750.1. Elev. 4410'. Depth 0-4". Shallow cold spring run in brush; sand-cobble substrate (mixed lithologies). No snails, for no apparent reason. 5/14/1993 TF, EJ!

1456. Tilden Bridge spring 4. Zone 12: 376,920E 4,775,840N. NE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> sec. 29, T3S R34E, Rockford quad., Bingham Co., Idaho. Snake R.-Columbia R. Unnamed spring on N. side of Snake River, just E. of Tilden Bridge (Ferry Butte Road), E. of Tilden Bridge Fishing Access, opposite Ferry Butte, about RM 750.3. Elev. 4410'. Depth 0-2". Basalt substrate; exposed bedrock; no macrophytes; cold shallow spring run. No snails; probably impacted by bridge construction. 6/27/1993 TF, EJ!

1457. Snake River at Tilden Bridge Fishing Access. Zone 12: 376,770E 4,775,760N. NW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> sec. 30, T3S R34E, Rockford quad., Bingham Co., Idaho. Snake R.-Columbia R. N. side of Snake River, 0.1-0.2 mi. SW of Tilden Bridge (Ferry Butte Road) at Tilden Bridge Fishing Access, opposite Ferry Butte, about RM 750.2. Elev. 4405'. Depth 2-36". Muddy river with gravel-boulder substrate (mostly basalt; some mud); common green and brown algae on rocks. River looks impacted; *Physella* only. Hand and dip net collections. 5/14/1993 TF, EJ!

1458. Cold Creek 1. Zone 12: 348,750E 4,727,360N. NW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> sec. 33, T8S R31E, Indian Springs quad., Power Co., Idaho. Cold Cr.-Snake R.-Columbia R., Deep Creek Mountains. Cold Creek to E. of county road bridge. Elev. 4970'. Depth 0-29". Large cold creek with extensive *Rorippa* at edges and *Potamogeton filiformis* beds. Sphaeriids and *Physella* only. Dip net and tray collections. 5/2/1992 TF, EJ!

1459. Cold Creek 2. Zone 12: 348,880E 4,727,230N. NE<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> sec. 33, T8S R31E, Indian Springs quad., Power Co., Idaho. Cold Cr.-Snake R.-Columbia R., Deep Creek Mountains. Unnamed source spring to Cold Creek, collected on E. side of run. Elev. 4970'. Depth 2-24". Cold and swift spring run, partly channeled and modified, lightly grazed. Run with extensive *Rorippa* beds; channel mostly mud, some quartzite cobbles; very swift. Possibly too impacted and modified; channel dug out, deep; sides unstable. Water quality looks good now. *Physella* only. Hand and dip net collections. 7/2/1992 TF, EJ!

1460. Cold Creek 3. Zone 12: 348,850E 4,727,400N. SE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> sec. 33, T8S R31E, Indian Springs 1971 quad., Power Co., Idaho. Cold Cr.-Snake R.-Columbia R., Deep Creek Mountains. *Cornus stolonifera* stands alongside source spring run to Cold Creek on E. side. Elev. 4980'. Red osier tangles; moist; soil highly calcareous; grassy and pastured beyond *C. stolonifera* stand. Snails uncommon live; *Oreohelix* only. Hand collected. 07/02/1992 TF, EJ!

1461. Bear River near mouth of Station Creek. Zone 12: 435,310E 4,670,580N. E<sub>1/2</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> sec. 21, T14S R40E, Riverdale quad., Franklin Co., Idaho. Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Bear River at bridge near mouth of Station Creek and ca. 0.2 mi. S. of ID36. Elev. 4610'. Depth 4-14". Medium-sized river; mud, sand, gravel, and cobble boulder substrate; common *Potamogeton crispus*, *Ceratophyllum*, filamentous algae. No mollusks; eutropified; looks impounded. 6/23/1993 TF, EJ!

1462. Strawberry Spring. Zone 12: 448,680E 4,684,320N. Unsurveyed; T13S R41E, Midnight Mountain. quad., Franklin Co., Idaho. Strawberry Cr.-Mink Cr.-Bear R.-Great Salt Lk., Bear River Range. Strawberry Spring on E. side of ID36 (FS42), ca. 9.2 mi. NE of Mink Creek, Strawberry Canyon, Mill Hollow, Cache National Forest. Elev. 6640'. Depth 2-6". Formerly large cold spring; gravel and cobble substrate; no macrophytes. Mostly diverted spring; no mollusks. 6/23/1993 TF, EJ!

1463. Swan Lake Creek. Zone 12: 420,020E 4,691,820N. NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> sec. 13, T12S R39E, Cottonwood Peak 1980 quad., Bannock Co., Idaho. Portneuf Range. Steep S. facing slope on N. side of Swan Lake Creek Road above Swan Lake Creek, ca. 5.1 mi. NE of Swandale. Elev. 5920'. Partly wooded (mostly *Celtis*) steep slope. Site slightly grazed. Uncommon live *Oreohelix "strigosa depressa"*. Hand collected. 06/22/1993 TF, EJ!

1464. Lone Pine Creek source spring. Zone 12: 418,320E 4,692,120N. Center NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 15, T12S R38E, Cottonwood Peak quad., Bannock Co., Idaho. Lone Pine Cr.-Swan Lk. Cr.-Deep Cr.-Bear R., Portneuf Range. Unnamed source spring of Lone Pine Creek, ca. 1.1 mi. NW of Lone Pine Road from Swan Lake Creek Road, S. of road. Elev. 5740'. Depth 0-2". Small very muddy cold spring in marshy field; grasses along borders. Culverted; almost completely destroyed. No mollusks. 6/22/1993 TF, EJ!

1465. Oneida Narrows 1. Zone 12: 436,750E 4,675,520N. NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 3, T14S R40E, Riverdale quad., Franklin Co., Idaho. Bear R.-Great Salt Lk., Bear River Range. Bear River in Oneida Narrows just N. of Oneida Narrows-Bear River Road bridge. Elev. 4650'. Depth 2-6". Medium-sized river with cobble (limestone)-boulder substrate; algal coating; no macrophytes. Looks nutrient-enriched. No mollusks. 6/23/1993 TF, EJ!

1466. Oneida Narrows 2. Zone 12: 436,700E 4,675,540N. NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 3, T14S R40E, Riverdale 1980 quad., Franklin Co., Idaho. Bear R.-Great Salt Lk., Bear River Range. S.-facing slope just W. of Oneida Narrows-Bear River Road bridge over Bear River in Oneida Narrows. Elev. 4680'. Open limestone slope; Ponderosa pine forest in vicinity; mostly grasses near bridge. Common *Oreohelix "strigosa depressa"*; rare *Helicodiscus salmoneus*. Hand collected. Site disturbed by road building. 06/23/1993 TF, EJ!

1467. Oneida Narrows 3. Zone 12: 435,260E 4,672,880N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 16, T14S R40E, Riverdale 1980 quad., Franklin Co., Idaho. Bear R.-Great Salt Lk., Bear River Range. E.-facing talus slope on W. side of Oneida Narrows-Bear River Road, Oneida Narrows, ca. 0.1 mi. s. of gravel pit, W. side of Bear River. Elev. 4680'. Shallow rocky (limestone) wooded slope (mixed *Pinus ponderosa*, deciduous). Common small *Oreohelix "strigosa depressa"*. Hand collected. 06/23/1993 TF, EJ!

1468. Oneida Narrows 4. Zone 12: 435,210E 4,672,020N. SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 16, T14S R40E, Riverdale quad., Franklin Co., Idaho. Bear R.-Great Salt Lk., Bear River Range. Bear River (W. side) below (E. of) Oneida Narrows-Bear River Road, Oneida Narrows, ca. 0.9 mi. N. of ID36. Elev. 4640'. Depth 2-8". River with cobble-boulder substrate; no macrophytes; common epiphytic algae; medium-sized river. Channel looks modified (straightened) and eutropified. No mollusks. 6/23/1993 TF, EJ!

1469. Birch Creek west tributary 1. Zone 12: 341,530E 4,901,680N. NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 27, T11N R29E, Italian Canyon quad., Lemhi Co., Idaho. Birch Cr.-Snake R.-Columbia R., Birch Creek Valley. Bend on S. side of creek, just W. of culvert under ID28. W. most tributary of Birch Creek. Elev. 6510'. Depth 1-22". Cold spring-fed creek (large spring run); abundant *Chara*, *Myriophyllum*, *Rorippa*, some red algae on rocks; silt-cobble bottom. Abundant snails (especially *Pyrgulopsis*). Dip net and tray and brush collections. 6/20/1993 TF, EJ!

1471. Hammer Creek Recreation Area. (127). Center NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 15, T28N R1E, White Bird 1982 quad., Idaho Co. Boulder piles and small talus to W. of Hammer Creek Recreation Area (BLM) access road, ca. 0.2 mi. N. of junction with Hammer Creek Road and 0.1 mi. W. of boat launch, W. of Salmon River at RM 52.7. Elev. 1480'. Boulder piles and small-scale talus of mixed lithologies; local bryophytes, *Prunus*, *Populus*, *Salix*, grasses; locally well-shaded. Uncommon *Allogona ptychophora ptychophora* and *Oreohelix jugalis*; very rare *Cryptomastix* n. sp. 6. Hand collected. Partly destroyed by rest area modification; some taluses above-high-water-mark talus. 10/22/1993 TF, EJ! [B39]

1472. Springs northeast of French Creek (211). Center SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 13, T24N R3E, Kelly Mountain 1964 quad., Idaho Co. Unnamed springs northeast of the town of French Creek, S. side

of the Salmon River (River of No Return) and French Creek Road (Idaho 1614). Elev. 1960-1980'. Two small cold springs and associated seeps; N.-facing, partly wooded, grasses and bryophytes locally; mostly muddy substrate. Springs not shown on USGS map. *Cryptomastix mullani clappi* hand collected. 8/10/1989 TF, EJ! [B11]

1481. South of White Bird Bridge 1 (212). NW $\frac{1}{4}$ , NE $\frac{1}{4}$ , SE $\frac{1}{4}$ , SW $\frac{1}{4}$ , NE $\frac{1}{4}$ , NW $\frac{1}{4}$  sec. 27, T28N R1E, Slate Creek 1981 quad., Idaho Co. S.-facing *Artemisia* slope and red basalt talus in small ravine on N. side of road to White Bird, ca. 0.5 mile S. of White Bird Bridge, W. of US95, S. side of Salmon River at RM 54.9, BLM lands. Elev. 1560'. Dry *Artemisia* scrub; red pumicous basalt. Dry and heavily grazed. No land snails found. 10/22/1993 TF, EJ! [B32]

1482. South of White Bird Bridge 2 (213). NW $\frac{1}{4}$ , SW $\frac{1}{4}$ , SE $\frac{1}{4}$ , NE $\frac{1}{4}$ , NW $\frac{1}{4}$  sec. 27, T28N R1E, Slate Creek 1981 quad., Idaho Co. Small basalt promontory and flanking ravines below (S. side of) road to White Bird, ca. 0.4 mile S. of White Bird Bridge, W. of US95, S. side of Salmon River at RM 54.8, BLM lands. Elev. 1520'. Rocky (basalt) open ridge and steep ravines, mostly S.-facing; *Artemisia* scrub, some *Celtis*, *Rhus* in ravines. Rare live and long-dead *Oreohelix jugalis*. Hand collected. 10/22/1993 TF, EJ! [B32]

1521. Jordan Creek tributary near Sunbeam Mine. 44°26'N 144°44'W. Custer Co. Idaho. Jordan Cr.-Yankee Fk.-Salmon R.-Snake R.-Columbia R. Jordan Creek tributary near Sunbeam Mine, off FS172, N. of Bonanza Creek. *Pupilla* sp. juvenile. One vial. 07/30/1993 RW!

1524. Idaho. Butcher Cr.-Clearwater R.-Snake R.-Columbia R. NE-facing slope on S. side of Fish Creek Road, ca. 2.6 mi. from Mt. Idaho turnoff. Elev. 4460'. Wooded, moderately steep slope, weak 2nd and 3rd growth *Pinus ponderosa* forest with some grasses, *Adoxa*, and *Linnaea*. Shallow soil. No land snails found. 04/24/1994 TF, EJ!

1525. Idaho. Butcher Cr.-Clearwater R.-Snake R.-Columbia R. N. -facing slope above (S. of) Fish Creek Road, ca. 3.8 mi. from Mt. Idaho turnoff. Elev. 4880'. *Pinus ponderosa* forest, rather dry and slope; second growth, rather thin litter, patchy grasses, mosses, *Linnaea*, *Goodyera*, *Viola*, morels, *Adoxa*. Uncommon *Allogona kochi occidentalis*; uncommon *Cryptomastix*; rare *Polygyrella*; rare *Allogona ptychophora ptychophora* (?); forest cut over (small trees). 04/24/1994 TF, EJ!

1526. Northwest of Bracket Gulch (142). NE $\frac{1}{4}$ , SW $\frac{1}{4}$ , NW $\frac{1}{4}$ , NW $\frac{1}{4}$  sec. 27, T28N R1E, Slate Creek 1981 quad., Idaho Co. NE-facing slope, ca. 0.6 mile NW of Bracket Gulch, and above Pittsburg Landing Road (FS493), W. side of Salmon River above mouth of Sotin Creek, ca. RM 54.5, BLM lands. Elev. 1440-1460'. Grassy open slope; dry, scattered *Rubus*, *Celtis*, *Prunus*, grasses; alluvial substrate. Dead *Allogona ptychophora ptychophora* only; not collected. Impacted by road building. 4/27/1994 TF, EJ! [B32]

1527. Below mouth of Mahoney Creek (159). NW $\frac{1}{4}$ , SE $\frac{1}{4}$ , SW $\frac{1}{4}$ , SE $\frac{1}{4}$ , NW $\frac{1}{4}$  sec. 1, T30N R2W, Boles 1963 quad., Idaho Co. NE-facing talus on S. side of Salmon River, ca. 0.3 mile above and opposite White House Bar and 0.2 mile below mouth of Mahoney Creek, RM 28.2, BLM lands. Elev. 1320-1360'. Phyllite-nephrite, large cobble-boulder talus; collected in moist mossy, shaded over with *Prunus*, ninebark, *Celtis*, diverse bryophytes. Common *Allogona ptychophora solida*; uncommon *Oreohelix* n. sp. 25; common *Helicodiscus salmoneus*; *Cryptomastix populi*; rare *Cryptomastix* n. sp. 3. Hand collected. 4/28/1994 TF, EJ! [B2]

1528. Bank of unnamed creek below White House Bar (160). SE $\frac{1}{4}$ , NW $\frac{1}{4}$ , SW $\frac{1}{4}$ , NE $\frac{1}{4}$  sec. 2, T30N R2W, Boles 1963 quad., Idaho Co. Bank of unnamed creek (W. side) just above mouth of canyon, below (W. of) White House Bar, N. side of Salmon River at RM 27.5, BLM lands. Elev. 1240'. Moist permanent creek with *Cornus stolonifera*; bryophytes; common *Celtis*; small

metasedimentary talus piles. Abundant *Cryptomastix populi*; common 3-toothed flat *Cryptomastix* n. sp. 3; uncommon *Oreohelix* n. sp. 25; uncommon *Allogona ptychophora solida*. Hand collected. 4/28/1994 TF, EJ! [B2]

1529. Slope above Snow Hole Rapids (161). N<sub>1/2</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> sec. 20, T31N R2W, Westlake 1979 quad., Idaho Co. S.-facing slope at mouth of unnamed gully above Snow Hole Rapids, N. side of Salmon River at RM 23.4-23.5, BLM lands. Elev. 1240'. Dry open basalt talus surrounded by granite bedrock; uncommon *Rhus diversiloba*; *Celtis*. Common *Cryptomastix populi*, 3-toothed *Cryptomastix* n. sp. 3; uncommon *Allogona ptychophora ptychophora*; rare *Oreohelix* n. sp. 25. Hand collected. 4/28/1994 TF, EJ! [B36]

1530. Below mouth of Maloney Creek (162). Projected SW corner; NW<sub>1/4</sub> & SW<sub>1/4</sub> SE<sub>1/4</sub> & NW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> sec. 7, T31N R2W, Hoover Point 1967 quad., Lewis Co. S.-facing slope on N. side of Salmon River below (W. of) mouth of Maloney Creek at RM 19.9. Elev. 1200'. Open, heavily grazed granite (hornblende, quartz, feldspar) boulder slope; *Artemisia* and grasses. Uncommon live *Oreohelix*; dead *Cryptomastix* only; long-dead *Allogona ptychophora ptychophora* (not retained). Hand collected. 4/28/1994 TF, EJ! [B7]

1531. White Bird Bridge North 1 (163). E<sub>1/2</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 22, T28N R1E, Slate Creek 1981 quad., Idaho Co. Large W.-facing talus slope to E. of White Bird Road on E. side of Salmon River, ca. 0.25 mile N. of White Bird Bridge at RM 54.2. Elev. 1680-1720'. Large-scale basalt talus slope; dry, open: scattered *Celtis*, grasses at base; cobble-boulder sized rocks. Moderately common large typical *Oreohelix jugalis*. Hand collected. 10/21/1989 TF, EJ, SW! Half of the talus has been mined for road material. Shovel present on the site. No *Oreohelix jugalis* collected. 6/1/1990 TF, EJ, SN! *Oreohelix jugalis* colony now extinct. Talus completely removed by mining for road material. 10/30/1990 TF, EJ! [B32]

1532. Skookumchuck Creek 1 (164). SE<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> sec. 1, T27N R1E, Slate Creek 1981 quad., Idaho Co. S.-facing talus to E. of prominent unnamed gully on N. side of Dairy Mountain Road (FS2025), ca. 3.0 road miles E. from US95 on Dairy Mountain Road (ca. 2.5 miles from mouth of Skookumchuck Creek) Elev. 2000'. Moderate-sized basalt talus; rather open and dry, but common *Rhus diversiloba*, grasses, scattered *Celtis*; *Sambucus* at base. Abundant *Oreohelix vortex*. Hand collected. 9/30/1990 TF, GH! [B34]

1533. North of Blackhawk Bar 3 (165). Center SE<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> sec. 35, T27N R1E, Slate Creek 1981 quad., Idaho Co. W.-facing cliff and prominent small and steep gully to SE of US95, ca. 9.0 miles N. of Riggins, S. side of the Salmon River at RM 66.9. Elev. 1600-1680'. Mossy schist cliffs and small-scale talus; abundant mosses, some *Prunus*, *Celtis*, *Cystopteris*, grasses. Common small *Cryptomastix harfordiana*; rarer *Allogona ptychophora* (not collected); dead *Oreohelix* n. sp. 21. Hand collected. 10/4/1990 TF, GH! [B35]

1534. Slate Creek 8 (166). N<sub>1/2</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 31, T27N R2E, Slate Creek 1981 quad., Idaho Co. S.-facing talus ca. 2.0 miles E. of US95 on Slate Creek Road (FS354) (N. of road), N. of Slate Creek. Elev. 1760-1800'. Very dry open, badly pastured shallow red basalt talus; scattered grasses; locally common *Celtis*. Dead *Oreohelix vortex* (long-dead) not collected. Extinct colony. 6/2/1990 TF, EJ, SN! [B35]

1535. Slate Creek 9 (167). NE<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 31, T27N R2E, Slate Creek 1981 quad., Idaho Co. S.-facing red basalt talus on N. side of Slate Creek Road (FS354), ca. 1.7 miles E. of US95, N. of Slate Creek. Elev. 1720'. Very dry pastured thin red basalt talus, very shallow; common grasses, *Balsamorhiza*, *Artemesia* clumps. Very badly pastured; extinct *Oreohelix vortex* colony (specimens not retained). 6/2/1990 TF, EJ, SN! [B35]

1536. Slate Creek 10 (168). SE<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 31, T27N R2E, Slate Creek 1981 quad., Idaho Co. S.-facing reddish basalt talus N. of Slate Creek Road (FS354), ca. 1.5 miles E. from US95, N. of Slate Creek. Elev. 1680-1720'. Pastured shallow, open and dry grassy reddish basalt talus slope, with common grasses, *Artemesia*, scattered *Celtus*, *Balsamorhiza*. Very badly pastured; extinct *Oreohelix vortex* colony with long-dead shells only not retained. 6/2/1990 TF, EJ, SN! [B35]

1537. Slate Creek 11 (169). SE<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> & NW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 36, T27N R1E, Slate Creek 1981 quad., Idaho Co. S.-facing shallow talus above (N. of) Slate Creek Road (FS354), ca. 1.1 miles E. of US95, N. of Slate Creek. Elev. 1640-1680'. Shallow vesicular basalt (with greenish agate) talus slope; some soil in talus; common *Celtus*, grasses, some other forbs. Shallow dry talus; extinct *Oreohelix vortex* colony (shells not retained). 6/2/1990 TF, EJ, SN! [B35]

1538. Slate Creek 12 (170). SW<sub>1/4</sub> NW<sub>1/4</sub>, NE<sub>1/4</sub> SW<sub>1/4</sub> & NW<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> sec. 25, T27N R1E, Slate Creek 1981 quad., Idaho Co. S.-facing slope ca. 0.2-0.3 mile E. off current US95 on old US95 cutoff on N. side, W. of Slate Creek Road (FS354) junction, N. of Slate Creek. Elev. 1640'. Mostly vegetated (grasses, *Celtus*) shallow-moderately steep dry and open grassy slope with scattered basalt alluvial cobbles. Perhaps too dry and modified by road building. No land snails seen. 6/2/1990 TF, EJ, SN! [B35]

1539. Slate Creek 1 (171). N<sub>1/2</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 36, T27N R1E, Slate Creek 1981 quad., Idaho Co. S.-facing slope ca. 0.7 mile E. off current US95 on Slate Creek Road (FS354) on N. side of road, N. of Slate Creek. Elev. 1600-1640'. Steep vesicular (green agate) basalt talus with admixed soil; common *Celtus*; some *Sorbus*; grasses; locally shaded. Common *Oreohelix vortex* locally; rarer *Helicodiscus salmoneus*; uncommon *Cryptomastix mullani olneyae*. Hand collected. 6/2/1990 TF, EJ, SN! [B35]

1540. Slate Creek 2 (172). NE<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 31, T27N R2E, Slate Creek 1981 quad., Idaho Co. Talus below Slate Creek Road (FS354), ca. 1.3 road miles E. of US95. Elev. 1680'. Cobble-sized reddish basalt talus with admixed soil; rather open and dry, with little cover other than grasses at top; abundant vegetation at base (edge of floodplain); common *Rhus diversiloba*, *Celtus*, forbs. Common *Oreohelix vortex*; *Helicodiscus salmoneus* and *Allogona ptychophora ptychophora* uncommon. Hand collected. 6/2/1990 TF, EJ, SN! [B35]

1541. Opposite Taylor Bar (173). SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 11, T27N R1E, Slate Creek 1981 quad., Idaho Co. W.-facing talus on S. side of unnamed gully opposite of Taylor Bar at the S. end of Campbell Flat, E. side of US95, E. of Salmon River, ca. RM 59.6. Elev. 1560'. Low, small-scale basalt talus, mostly open and grassy. *Cryptomastix harfordiana* hand collected. 10/5/1990 TF, GH! [B33]

1542. North end of Campbell Flat (174). NE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> sec. 10, T27N R1E, Slate Creek 1981 quad., Idaho Co. W.-facing talus across from N. end of Campbell Flat on E. side of US95, E. of Salmon River at RM 58.9. Elev. 1540'. Moderately low basalt talus, rather open and dry except at base (grasses, mosses). *Oreohelix jugalis*, *Allogona ptychophora ptychophora*, and a few *Cryptomastix* n. sp. 5 hand collected. 10/5/1990 TF, GH! [B33]

1543. Slate Creek 4 (175). N<sub>1/2</sub> SW<sub>1/4</sub> & N<sub>1/2</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> sec. 33, T27N R2E, McKinzie Creek 1963 quad., Idaho Co. S.-facing talus above (N. of) Slate Creek Road (FS354), ca. 4.0 mile E. of US95. Elev. 2000'. Rather open schist talus; varies from boulder-cobbles, very open to partly shaded; *Celtus*, *Artemesia*, *Prunus*, *Sorbus*. Abundant *Discus marmoreensis*; common *Oreohelix* n. sp. 22; less common *Allogona ptychophora ptychophora*. Hand collected.

10/4/1990 TF, GH! *Oreohelix* n. sp. 22, *Discus marmorensis*, *Cryptomastix mullani olneyae*, and *Allogona ptychophora ptychophora* hand collected. 6/17 1993 TF, EJ! [B19]

1544. Slate Creek 3 (176). N<sub>1/2</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> sec. 35, T27N R2E, McKinzie Creek 1963 quad., Idaho Co. SE-facing slope below (S. of) Slate Creek Road (FS354) to flood plain of Slate Creek, ca. 5.7 miles from (E. of) US95, Nez Perce National Forest. Elev. 2280'. Wooded steep schist and limestone slope (*Pinus ponderosa* forest), deep soil, moist. Uncommon *Oreohelix strigosa* n. subsp. 1, *Oreohelix* n. sp. 22; *Allogona lombardii* and *ptychophora ptychophora*; rare *Discus marmorensis*; *Anguispira kochi occidentalis*; *Cryptomastix mullani olneyae*. hand collected. 6/1/1990 TF, EJ, SN! Rare *Oreohelix strigosa* n. subsp. 1, *Oreohelix* n. sp. 22; *Allogona lombardii*; uncommon *Discus marmorensis*; *Cryptomastix mullani olneyae*; *Allogona ptychophora ptychophora*. Hand collected. 10/4/1990 TF, EJ! [B19]

1545. Slate Creek 5 (177). N<sub>1/2</sub> NW<sub>1/4</sub> & N<sub>1/2</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> sec. 35, T27N R2E, McKinzie Creek 1963 quad., Idaho Co. S.- and SE-facing slope N. of Slate Creek Road (FS354), ca. 6.2-6.7 miles from US95, Nez Perce National Forest. Elev. 2440'. Very steep and moist wooded limestone slope in *Pinus ponderosa* forest; abundant forbs, mosses; deciduous understory. Common *Oreohelix* n. sp. 22; *Allogona lombardii* rare; *Oreohelix strigosa* n. subsp. 1; very rare *Hemphillia* sp.; uncommon *Discus marmorensis*; *Cryptomastix mullani olneyae*; common *Allogona ptychophora ptychophora* and large *Anguispira kochi occidentalis*. Hand collected. 6/1/1990 TF, EJ, SN! Abundant *Oreohelix* n. sp. 22; rare *Allogona lombardii*; *Oreohelix strigosa* n. subsp. 1; very rare *Hemphillia* sp.; *Cryptomastix mullani olneyae*; uncommon *Discus marmorensis*; common *Allogona ptychophora ptychophora*; abundant large *Anguispira kochi occidentalis*. Hand collected. Site threatened by limestone quarry (Suzie Q). 10/4/1990 TF, GH!

[B19]

1546. Slate Creek 6 (178). SW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 31, T27N R3E, McKinzie Creek 1963 quad., Idaho Co. S.-facing steep slope above (N. of) Slate Creek Road (FS354), ca. 8.7 miles E. from US95 and 0.3 mile W. of North Fork Campground, Nez Perce National Forest. Elev. 2800'. Steep, wooded limestone knob, N. of Slate Creek Road; *Pinus ponderosa* forest with *Linnaea*, *Cornus canadensis*, other forbs. *Oreohelix* n. sp. 22; *Cryptomastix mullani olneyae*; *Discus marmorensis*; *Allogona ptychophora ptychophora*. Hand collected. 6/1/1990 TF, EJ, SN! Common *Oreohelix* n. sp. 22; rare *Discus marmorensis*; *Cryptomastix* sp., *Allogona ptychophora ptychophora*, and *Anguispira kochi occidentalis* hand collected. 10/4/1990 TF, GH! *Oreohelix* n. sp. 22, *Discus marmorensis*; *Cryptomastix mullani olneyae*, *Anguispira kochi occidentalis*, and *Allogona ptychophora ptychophora* hand collected. 6/17/1993 TF, EJ! [B20]

1547. Papoose Creek 1 (179). NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 25, T24N R1W, Kessler Creek 1964 quad., Idaho Co. Dominantly S.-facing low limestone knob at mouth of gully and base of Papoose Saddle, 5.8 miles NW of US95 on Seven Devils Road (FS517) or about 3.2 miles from Squaw Creek Road junction (FS487), on NW side of road, above Papoose Creek, Nez Perce National Forest. Elev. 4200-4240'. Cut-over low limestone knob in *Pinus ponderosa* forest; mossy, moist understory with abundant forbs, including *Viola*. Thin litter (cut over) and rocky soil; common large *Oreohelix strigosa* n. subsp. 1; uncommon *Allogona ptychophora ptychophora*; rare *Cryptomastix mullani olneyae*. Hand collected. 4/25/1994 TF, EJ! [B13]

1548. Idaho. Papoose Cr.-Squaw Cr.-Salmon R.-Snake R.-Columbia R. Unnamed spring S. of Papoose Saddle with source directly below Seven Devils Road (FS517), ca. 6.0 mi. NW from US95, about 3.2 mi. from junction of Squaw Creek Road (FS487), N. of Papoose Creek, Nez Perce National Forest. Elev. 4200'. Moderate-sized cold spring with dense *Rorippa* and some open areas; mud-cobble substrate (some limestone); travertine deposition at source. Spring not shown of USGS map. Common *Valvata* n. sp. and *P. hemphilli*; sphaeriids; *Physella*. Hand, dip net and tray collection. 04/25/1994 TF, EJ!

1549. Papoose Creek 3 (180).  $W\frac{1}{2} NW\frac{1}{4} SW\frac{1}{4}$  sec. 27, T24N R1W, Kessler Creek 1964 quad., Idaho Co. Seven Devils Road (FS517), ca. road mile 9.5-10.0 E. from US95, on N. side of road and McClinery Ridge, Nez Perce National Forest. Elev. 5880-5960'. Moist *Pinus ponderosa* forest (common bryophytes); but very open; logging debris, *Rubrus* common. Large *Oreohelix strigosa* n. subsp. 1 rare; very rare *Radiodiscus abietum*; mostly logged and open. Hand collected. 10/2/1990 TF, GH! [B13]

1550. Kessler Creek 1 (181).  $NW\frac{1}{4} SE\frac{1}{4} SW\frac{1}{4}$  sec. 36, T25N R1W, Kessler Creek 1964 quad., Idaho Co. Predominantly on S.-facing slope (partly on N.-facing slope) 2.3 miles up Kessler Creek Road (FS410), off Race Creek Road, on limestone knob on both sides of Kessler Creek and road, Nez Perce National Forest. Elev. 4000-4200'. *Pinus ponderosa* forest (partly logged), on limestone knob surrounded by basalt (E.) and schist (W.) on both sides of road and flanking Kessler Creek floodplain. Abundant large *Oreohelix strigosa goniogyra* or related species, on limestone only, mostly in unlogged area. Hand collected. 10/2/1990 TF, GH! [B12]

1551. Southwest Grave Creek Saddle 1 (182).  $E\frac{1}{2} SE\frac{1}{4} NE\frac{1}{4} SW\frac{1}{4} NE\frac{1}{4}$  sec. 2, T24N R1W, Kessler Creek 1964 quad., Idaho Co. Predominantly S.-facing open area on Grave Creek Road (FS2052), ca. 2.5 miles W. of origin, near crossing of Grave Creek Trail, SW ca. 0.5 mile from Grave Creek Saddle, high above Grave Creek on N. side, Nez Perce National Forest. Elev. 4680'. Schist outcrops; open *Pinus ponderosa* forest. *Oreohelix strigosa goniogyra* only live near road (abundant) and outcrops. Millions of dead shells in adjacent logged areas; none live there. Hand collected. 10/3/1990 TF, GH! [B12]

1552. Southwest Grave Creek Saddle 2 (183).  $SW\frac{1}{4} NE\frac{1}{4} NW\frac{1}{4} SW\frac{1}{4} NE\frac{1}{4}$  sec. 2, T24N R1W, Kessler Creek 1964 quad., Idaho Co. Mostly SW-facing schist outcrops along Grave Creek Road (FS2052), W. of Grave Creek Trail, ca. 0.7 mi. SW of Grave Creek Saddle, ca. 2.8 miles from Kessler Creek Road, high above Grave Creek on N. side, Nez Perce National Forest. Elev. 4720'. Schist outcrops, formerly moist *Pinus ponderosa* forest (now logged). Common *Oreohelix strigosa goniogyra* along road on outcrops; dead shells only in logged and burned areas. Hand collected. 10/3/1990 TF, GH! [B12]

1553. John Day Creek 1 (184).  $NW\frac{1}{4} & NE\frac{1}{4} NW\frac{1}{4} SE\frac{1}{4} SE\frac{1}{4}$  sec. 18, T26N R2E, John Day Mtn. 1963 quad., Idaho Co. NW-S.-facing talus 2.7 miles up John Day Creek Road E. from US95; prominent limestone outcrop to N. of road Elev. 2560-2680'. Type locality for *Oreohelix haydeni hesperia*. Large, mostly open limestone talus (cobble-sized) and outcrops just E. of gully; common grasses, *Celtis*; soil common in talus. Very common live and dead shells of *Oreohelix haydeni hesperia*. Hand collected. 8/11/1989 TF, EJ, SW! *Oreohelix haydeni hesperia* and *Allogona ptychophora ptychophora* hand collected. 5/31/1990. [B8]

1554. John Day Creek 2 (185).  $NE\frac{1}{4} NE\frac{1}{4} SW\frac{1}{4} SE\frac{1}{4} SE\frac{1}{4}$  sec. 18, T26N R2E, John Day Mtn. 1963 quad., Idaho Co. SE-facing gully about 2.6 miles up John Day Creek Road from US95, on N. side of road and creek. Elev. 2560-2680'. Type locality of *Cryptomastix mullani latilabris*. Limestone cobble-gravel talus in gully; mostly *Celtis* scrub; dry, leaf-covered. Uncommon live *Cryptomastix mullani latilabris*, common *Oreohelix haydeni hesperia*, *Pristiloma*, etc. Hand and litter sampled. 8/11/1989 TF, EJ, SW! *Cryptomastix mullani latilabris* and *Oreohelix haydeni hesperia* hand collected. 10/1/1990 TF! *Oreohelix haydeni hesperia* and *Cryptomastix mullani latilabris* hand collected. 10/17/1993 TF, EJ! [B8]

1555. John Day Creek 3 (186). Center  $NW\frac{1}{4} SE\frac{1}{4} SW\frac{1}{4}$  sec. 18, T26N R2E, Lucile 1963 quad., Idaho Co. S.-facing talus 1.95 miles up John Day Creek Road from US95, on N. side of road, ca. 0.1 mile from cluster of houses. Elev. 2240-2280'. Type locality of *Oreohelix waltoni*. Low basalt talus, badly pastured below, with common *Celtis*, grasses; mostly open and dry, cut by cow

paths. No *Oreohelix waltoni* found in lower talus. 8/11/1989 TF, EJ, SW! *Oreohelix jugalis* rare in base; *Allogona ptychophora ptychophora* uncommon; heavily pastured; no *Oreohelix waltoni* obvious. Hand collected. 6/1/1990 TF, EJ, SN! Lower talus examined, no *Oreohelix waltoni*. 10/3/1990 TF! *Oreohelix jugalis* rare in base to upper talus; *Allogona ptychophora ptychophora* uncommon; rare live (juveniles only, not retained) and dead *Oreohelix waltoni* in upper talus; *Cryptomastix mullani latilabris*. Hand collected. 10/17/1993 TF, EJ! [B14]

1556. Box Canyon (187). SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 2, T26N R1E, Lucile 1963 quad., Idaho Co. SW-facing small seep in gully in Box Canyon, N. of US95 at road mile 211.7, N. side of Salmon River, RM 69.05, BLM lands. Elev. 1800-1840'. Shallow seepy area with common *Celtus* below, dry and open above, surrounded by cliffs NW and SW; metasedimentary rocks, schist. Common *Oreohelix waltoni*, *Oreohelix* n. sp. 21 locally in small area; common *Pupilla hebes*, *Vallonia cyclophorella*, etc. in litter; uncommon *Cryptomastix harfordiana*; most of the talus removed by road construction. Hand and litter sampled. 6/1/1990 TF, EJ, SN! [B14]

1557. Box Canyon South (188). NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 1, T26N R1E, Lucile 1963 quad., Idaho Co. SW-facing very steep cliff opposite RM 69.4, NE side of Salmon River near geological marker, NE of US95, BLM lands. Elev. 1600'. Small very steep gully in metasedimentary cliff face, very open and dry, very limited talus; grasses only. Very rare *Oreohelix* n. sp. 21 and *Cryptomastix* n. sp. 5; most talus removed by road building. Hand collected. 8/11/1989 TF, EJ, SW! [B14]

1558. South of Long Gulch (189). E $\frac{1}{2}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  & E $\frac{1}{2}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 12, T26N R1E, Lucile 1963 quad., Idaho Co. W.-facing slope on old US95 cutoff ca. 0.4 mile S. of Long Gulch and 0.2 mile N. of present US95; approximately RM 69.9. Elev. 1640'. Alluvium over granite; sandy, mostly grasses; some *Celtus*, *Artemisia*, *Balsamorhiza*; thin, dry soil. No land snails seen. 6/1/1990 TF, EJ, SN! [B14]

1559. Opposite John Day Bar (190). Center NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 23, T26N R1E, Lucile 1963 quad., Idaho Co. W.-facing slope to E. of US95 and ca. 0.2 mile S. of mouth of John Day Creek, opposite John Day Bar on E. side of Salmon River at RM 72.8. Elev. 1600-1680'. *Celtus* stand in alluvium, shaded and moist. Common *Allogona ptychophora ptychophora*; uncommon *Oreohelix jugalis*. Hand collected. 8/11/1989 TF, EJ, SW! [B14]

1560. South of Rice Creek Bridge (191). E $\frac{1}{2}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 25, T30N R1W, Moughmer Point 1963 quad., Idaho Co. Level area ca. 0.1 mile S. of Rice Creek Bridge on E. side of Rice Creek Road, E. of Salmon River, RM 37.6. Elev. 1320'. Bridge also called Boles Bridge. Nearly level grassy area and shallow basalt talus below (W. of) road; mostly grasses, scattered basalt boulders. Common *Oreohelix* n. sp. 25, *Cryptomastix* n. sp. 3, and *Allogona ptychophora ptychophora*. Hand collected. 9/29/1990 TF, GH! [B23]

1561. Berg Bar South (192). NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 18, T24N R2E, Riggins 1964 quad., Idaho Co. N.-facing steep hillside on S. end of Berg Bar and W. of shallow knob, S. side of French Creek Road (Idaho Co. 1614), S. side of Salmon River (River of No Return), RM 90.1. Elev. 1800-1840'. Grassy slope developed on schist talus. Moderately common *Oreohelix* n. sp. 15; uncommon *Allogona ptychophora ptychophora* (not collected) and *Cryptomastix mullani clappi*. Hand collected. 5/31/1990 TF, EJ, SN! Rare *Oreohelix* n. sp. 15, rare live *Cryptomastix mullani clappi*, and *Allogona ptychophora ptychophora*. Hand collected. 10/3/1990 TF, GH! [B29]

1562. Opposite mouth of Berg Creek (193). SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 18, T24N R2E, Riggins 1964 quad., Idaho Co. N.-facing spring slope to E. of campground and bar, S. side of French Creek Road (Idaho Co. 1614) at road mile 4.1-4.3, on E. side of low knob, S. side of Salmon River (River of No Return), RM 90.3-90.5. Elev. 1800-1840'. Partly consolidated schist talus; very moist with weakly distinct springs; grasses, deciduous trees, good understory; local landslides. *Oreohelix* n.

sp. 15 uncommon live; dead only *Cryptomastix mullani clappi* (not retained). Hand collected. No aquatic mollusks found in the springs. 8/11/1989 TF, EJ, SW! *Oreohelix* n. sp. 15; *Cryptomastix mullani clappi*, dead (not retained); uncommon *Allogona ptychophora ptychophora* (not retained). Hand collected. 5/31/1990 TF, EJ, SN! [B29]

1563. Lake Creek 1 (194). SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 28, T24N R2E, Riggins Hot Springs 1964 quad., Idaho Co. N.-facing slope approximately 0.4 mile S. of Lake Creek Bridge to S. up Lake Creek. Elev. 2000'. Partly wooded slope with large granite and metasedimentary boulders. Single *Oreohelix* n. sp. 15; *Allogona ptychophora* rare; 1 odd small *Oreohelix* sp.; rare *Cryptomastix mullani clappi*. Hand collected. 10/3/1990 TF, GH! [B30]

1564. Twilegar Gulch (195). N $\frac{1}{2}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 35, T26N R1E, Lucile 1963 quad., Idaho Co. Ca. 0.6 mile up Twilegar Gulch Road E. from US95, in main gully for Twilegar Gulch. Elev. 1960-2040'. *Oreohelix haydeni perplexa* type locality. Exposed limestone outcrops and small talus piles in *Artemisia* scrub, Twilegar Gulch below prominent limestone ledges and exposures. *Oreohelix haydeni perplexa* live only in small area on S. side of main gulch and surrounding *Artemisia* scrub; dead over much of SE $\frac{1}{4}$  sec. 35. Abundant dead, rare live *Oreohelix haydeni perplexa*; *Cryptomastix* n. sp. 5. Hand collected. 8/10/1989 TF, EJ, SW! *Oreohelix haydeni perplexa* and live *Cryptomastix* n. sp. 5 hand collected. 6/1/1990 TF, EJ, SN! *Oreohelix haydeni perplexa* rarely live, most dead; one scalariform. Hand collected. 10/1/1990 TF, GH! [B15]

1566. Idaho. Rock Cr.-Salmon R.-Snake R.-Columbia R. Small spring ca. 2.4 mi. up Rock Creek Road from junction of Pine Bar and Rice Creek Roads on W. side of road, Rocky Canyon. Elev. 1540'. Heavily impacted muddy cold spring; scattered basalt cobbles; abundant Blackberry cover; no macrophytes. Rare *P. hemphilli* in only accessible area. Dip net collection. 04/28/1994 TF, EJ!

1567. Idaho. Rock Cr.-Salmon R.-Snake R.-Columbia R. Muddy marsh on W. side of Rock Creek Road, ca. 3.2 mi. N. from junction of Pine Bar and Rice Creek Road, Rocky Canyon. Elev. 1660'. Depth 0-4". Muddy marsh with *Typha*, *Veronica*; spring-fed from NE end; cold; braided, very shallow channels. Sporadically common "Valvata" in *Veronica* roots; some sphaeriids. Dip net collections. 04/28/1994 TF, EJ!

1568. Idaho. Grave Cr.-Rock Cr.-Salmon R.-Snake R.-Columbia R. Unnamed spring tributary to Grave Creek to W. of Grave Creek Road 0.15 mi. N. of junction with Rock Creek. Elev. 1890'. Depth 0-4". Capped cold spring with some remaining outflow; mud and basalt cobble substrate; no macrophytes. Spring not indicated on USGS map. Dip net collection. Sphaeriids only, not collected. 04/24/1994 TF, EJ!

1569. Idaho. Grave Cr.-Rock Cr.-Salmon R.-Snake R.-Columbia R. Piped and modified unnamed spring on basalt cliff face W. of Grave Creek Road and 0.2 mi. N. of Weis Rock Shelter. Elev. 1960'. Depth 0-8". Much-modified cliff-face cold spring and pool (concrete); mostly mud substrate underlain by concrete in pool; basalt cobbles below. *Stagnicola idahoensis* (?) common in pool, on cliff face; rare *Fossaria*, *G. parvus*; common sphaeriids. Hand and dip net collections. 04/28/1994 TF, EJ!

1570. Idaho. Grave Cr.-Rock Cr.-Salmon R.-Snake R.-Columbia R. Unnamed spring at mouth of Blackburn Gulch, tributary of Grave Creek, ca. 1.2 mi. N. of junction with Rock Creek. Elev. 2110'. Depth 0-6". Rocky (cobbles, mostly basalt) substrate; no macrophytes. Spring not on USGS map. Strong flow; no molluscs. 04/28/1994 TF, EJ!

1571. Idaho. Grave Cr.-Rock Cr.-Salmon R.-Snake R.-Columbia R. Very shallow unnamed muddy spring run W. of Grave Creek Road and 0.5 mi. S. of mouth of Cold Spring Gulch. Elev. 2280'.

Depth 0-2". Very shallow muddy cold spring run with *Typha*, rare *Veronica*. Spring not shown on USGS map. Rare *Valvata*; common sphaeriids. Dip net collection. 04/28/1994 TF, EJ!

1572. Idaho. Grave Cr.-Rock Cr.-Salmon R.-Snake R.-Columbia R. Large unnamed spring run on N. side of Grave Creek Road ca. 0.4 mi. E. of major switchback; source to Grave Creek?. Elev. 2920'. Depth 1-6". Large cold spring run; braided; abundant *Veronica*; cobble-mud substrate. Spring not shown on USGS map. Cleared of trees and brush 4/28/94; common *Valvata*; rarer *Stagnicola montanensis*?; common sphaeriids. Dip net and hand collections. 04/28/1994 TF, EJ!

1573. Idaho. Rapid R.-Little Salmon R.-Salmon R.-Snake R.-Columbia R., Seven Devils Mts., Rapid R. Thorn Creek in Thorn Gulch, W. side of Idaho Power Trail 113, W. side of Rapid River. Elev. 2250'. Depth 0-2". Cold creek with moss covered rocks, patch *Rorippa*. No molluscs seen in creek. 10/11/1993 TF, EJ!

1574. Mission Creek Quarry. Zone 11: 522,930E 5,126,500N. W<sub>1/2</sub> NE<sub>1/4</sub> & NE<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> NE<sub>1/4</sub> sec. 16, T34N R3W, Culdesac South 1985 quad., Lewis Co., Idaho. Mission Cr.-Lapwai Cr.-Clearwater R.-Snake R.-Columbia R. W.-SW-facing talus and outcrops below (W. of) quarry, E. of Mission Creek, about 8.0 rd. mi. from Jacques Spur, E. side of quarry access road off Mission Creek Road, Nez Perce Reservation. Elev. 2040-2080'. Limestone outcrop and talus (some basalt present) to E. of quarry access rd. and ditch, including small wooded gully with seep; mostly dry, with forbs; common bryophytes locally; gully shaded by deciduous trees. Presumed type locality for *Triodopsis mullani magnidentata* Pilsbry, 1940. Uncommon *Cryptomastix magnidentata* mostly collected dead, rarely live. Hand collected. 09/02/1990 TF, EJ, JJ! Uncommon *Cryptomastix magnidentata* mostly collected dead, rarely live. Hand collected. 09/29/1990 TF! Uncommon *Cryptomastix magnidentata* mostly collected dead, rarely live; *Polygyrella polygyrella*; *Allogona ptychophora solida*; *Helicodiscus salmoneus*; *Vitrina limpida*. Hand collected. 06/22/1993 TF, EJ!

1575. Opposite Mission Creek Quarry. Zone 11: 522,970E 5,126,200N. SE<sub>1/4</sub> NE<sub>1/4</sub> & E<sub>1/2</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> sec. 16 & NW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 15, T34N R3W, Culdesac South 1985 quad., Nez Perce Co., Idaho. Mission Cr.-Lapwai Cr.-Clearwater R.-Snake R.-Columbia R. E.-facing talus SW of quarry on opposite side (W.) of Mission Creek, about 8.0 rd. mi. from Jacques Spur, W. of quarry access road off Mission Creek Road. Elev. 2040-2080'. Basalt talus with large blocks; heavily moss covered; fairly moist with some shrubs, deciduous trees at base along the creek. *Vitrina limpida*, *Helicodiscus salmoneus*, and rare dead immature *Oreohelix* sp. 06/22/1993 TF, EJ!

1583. East Fork Rock Creek 1. Zone 12: 353,420E 4,713,190N. SW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> sec. 12, T10S R31E, Rockland East quad., Power Co., Idaho. E. Fk. Rock Cr.-Rock Cr.-Snake R.-Columbia R., Deep Creek Mountains. East Fork Rock Creek at W.-most public access (ID state land), ca. 4.0 mi. E. of Rockland. Elev. 5080'. Depth 4-18". Large cold spring-influenced creek; mostly sand-cobble substrate (mixed, especially basalt and quartzite); *Chara* beds, dense *Rorippa*, *Potamogeton filiformis*; some *Elodea*; some red algae on large liths. *Pyrgulopsis* common in macrophytes at sides of creek; State of Idaho owners. Dip net, tray, and bucket. 5/2/1992 TF, EJ!

1584. East Fork Rock Creek 2. Zone 12: 354,570E 4,713,060N. NE<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 18, T10S R32E, Rockland East quad., Power Co., Idaho. E. Fk. Rock Cr.-Rock Cr.-Snake R.-Columbia R., Deep Creek Mountains. Medium-sized spring in valley of East Fork Rock Creek, ca. 5.0 mi. E. of Rockland; source spring of E. Fk. Elev. 5180'. Depth 0-6". Cold spring with cobbles on sand and gravel; dense *Rorippa*; some red algae on quartzite cobbles. Partly pastured; in center of creek valley. *Pyrgulopsis* n. sp. rather common. Dip net and brush and tray collections.

Specimens failed to properly relax. 5/2/1992 TF, EJ! *Pyrgulopsis* n. sp. abundant. Dip net and brush and tray collections. Specimens well relaxed. 5/4/1992 TF, EJ!

1585. East Fork Rock Creek 3. Zone 12: 354,530E 4,712,020N. Center SW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 18, T10S R32E, Rockland East quad., Power Co., Idaho. E. Flk. Rock Cr.-Rock Cr.-Snake R.-Columbia R., Deep Creek Mountains. Spring perched on S. side of valley of East Fork Rock Creek, above source spring of East Fork Rock Creek, ca. 5.0 mi. E. of Rockland. Elev. 5180'. Depth 0-2". Medium-sized shallow cold spring perched above valley floor; cobble substrate (quartzite); dense *Rorippa* cover; grazed in part; near rock outcrops. *Pyrgulopsis* n. sp. rather uncommon and local. Hand and dip net collections. 5/2/1992 TF, EJ!

1627. Spring Creek. Zone 12: 470,760E 4,665,100N. NE<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> NE<sub>1/4</sub> sec. 12, T15S R43E, Dingle 1967 quad., Bear Lake Co., Idaho. Spring Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear Lake Plateau. Spring Creek collected on W. side of road crossing 2.9 mi. N. of St. Charles, W. side of Bear Lake. Elev. 5930'. Depth 2-16". Large spring-fed swift cold creek; mud and gravel substrate; common epiphytic algae (mostly *Cladophora*); abundant *Rorippa* and common *Veronica* at edges. No molluscs; should be good, but modified, somewhat eutropified. Mucked out? Dip net collections attempted. 06/24/1993 TF, EJ!

1628. Pass Creek spring 2. Zone 12: 304,030E 4,869,760N. SE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> sec. 11, T7N R25E, Methodist Creek quad., Custer Co., Idaho. Pass Cr.-Lost R.-Snake R.-Columbia R., Lost River Mts. Unnamed small spring ca. 0.2 mi. N. of mouth of Blue Jay Canyon, on W. side of Pass Creek Road (FS122), Challis National Forest. Elev. 6540'. Depth 0-2". Small cold spring on an open E.-facing limestone slope; common *Rorippa*; shallow, mixed mud-cobble and gravel (limestone) substrate; no epiphytic algae or macrophytes. Spring not on USGS map. No mollusks. 6/6/1992 TF, EJ!

1629. Unnamed spring in Ninety Percent Canyon. Zone 12: 447,770E 4,725,620N. NW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> sec. 35, T8S R41E, Alexander quad., Caribou Co., Idaho. Bear R.-Salt Lk., Ninety Percent Range. Unnamed spring in S. end of Ninety Percent Canyon, ca. 0.3 mi. W. of Ninety Percent Spring, S. of access road, NW of Soda Springs. Elev. 5760'. Depth 0-3". Stagnant cold spring with mud bottom; no macrophytes. No mollusks. 6/11/1992 TF, EJ! o

1630. Cold Creek 5. Zone 12: 348,855E 4,727,400N. NE SW NW SE NW sec. 33, T8S R31E, Indian Springs quad., Power Co., Idaho. Cold Cr.-Snake R.-Columbia R., Deep Creek Mountains. Unnamed source spring to Cold Creek, on S. side of mouth of Cold Creek Canyon, below county road. Shallow (0-2") but broad medium-sized cold spring run; cold; clear; moderate velocity; no macrophytes or epiphytic algae; sand, mud, and scattered cobble substrate. *Cornus stolonifera* cover. Dead *Oreohelix* rare along shore. Dip net collection; few sphaeriids only, not retained. Heavily grazed. 5/2/92 TF, EJ!

1639. Snake River opposite and below Blueheart Springs. Twin Falls Co. Idaho. Snake R.-Columbia R. Snake River across from and just below Blueheart Springs. Sandbar. *Anodonta californiensis* range of sizes and ages. . 07/18/1995 PAB!

1640. Summit Creek near Butte/Custer County line. Butte Co. Idaho. Summit Cr.-Little Lost R.-Snake R.-Columbia R. Summit Creek just inside Butte County (near or at the Custer County boundary) on dirt road from Arco to Goldberg. Spring-fed creek. Abundant *Fluminicola* (near full ontogeny). 07/21/1995 PAB!

1658. Downata Hot Springs. Zone 12: 410,630E 4,993,290N. NW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> sec. 12, T12S R37E, Downey East quad., Bannock Co., Idaho. Marsh Cr.-Bear R.-Great Salt Lk., Marsh Valley. Downata Hot Springs to E. of current Downata Hot Springs Resort, ca. 0.4 mi. SW from

US91, above Marsh Creek, ca. 4.1 mi. SE of Downey. Elev. 4760'. Depth 0-4". Small warm spring with dense algae, outcropping on alluvial terrace. Modified spring in old part of resort, mostly piped to newer section to NW. No mollusks. 6/22/1993 TF, EJ!

1671. Birch Creek springs 5. Zone 12: 342,990E 4,899,500N. SW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 2, T10N R29E, Blue Dome quad., Lemhi Co., Idaho. Birch Cr.-Snake R.-Columbia R., Birch Creek Valley. Moderate-sized spring; third S. of Kaufman Guard Station and just W. of Birch Creek, E. of ID28. Elev. 6400'. Depth 2-4". Shallow, moderate-sized, *Rorippa*-covered cold spring; grass and *Scirpus*-covered banks. Common *Pyrgulopsis* n. sp., rather uncommon sphaeriids, and some *Physella*. Hand and dip net collections. 6/20/1993 TF, EJ!

1672. Michaud Creek spring 2. Zone 12: 375,540E 4,741,600N. NE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 18, T7S R34E, Michaud Creek quad., Power Co., Idaho. Michaud Cr.-Snake R.-Columbia R., Bannock Range. Unnamed spring above (N. of) Michaud Creek Road (FS007); tributary of Michaud Creek. Elev. 5680'. Spring now mostly destroyed by gravel pit. No snails. 6/21/1993 TF, EJ!

1680. Riverdale springs 1. Zone 12: 432,140E 4,669,690N. NW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> sec. 30, T14S R40E, Riverdale quad., Franklin Co., Idaho. Bear R.-Great Salt Lk., Bear River Range. Small spring on 4400 Road, ca. 0.2 mi. W. of junction with ID36 and ca. 1.1 mi. NE of Riverdale. Elev. 4630'. Depth 0-1". Small cold spring; common *Mimulus*, rare *Rorippa*; gravel-mud substrate; S.-facing, open. Spring not on USGS map. No mollusks. Hand, dip net collections. 6/23/1993 TF, EJ!

1681. Riverdale springs 2. Zone 12: 432,260E 4,669,760N. SW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> sec. 30, T14S R40E, Riverdale quad., Franklin Co., Idaho. Bear R.-Great Salt Lk., Bear River Range. Small piped spring on 4400 Road, ca. 0.05 mi. W. of junction with ID36, ca. 1.1 mi. NE of Riverdale. Elev. 4660'. Depth 0-1". Open grassy slope with small cold spring, mostly piped; *Mimulus*, *Typha* in ditch below. Spring not on USGS map. No mollusks. Dip net collection. 6/23/1993 TF, EJ!

1682. Riverdale springs 3. Zone 12: 432,580E 4,670,000N. NE<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> sec. 29, T14S R40E, Riverdale quad., Franklin Co., Idaho. Bear R.-Great Salt Lk., Bear River Range. Small spring on N. side of Bear River, ca. 1.3 mi. NE of Riverdale on ID36 (N. of road). Elev. 4660'. Depth 0-1". Small, almost dry cold spring; muddy substrate; *Rorippa* at edges; narrow channel. Spring not on USGS map. No mollusks. Dip net collection. 6/23/1993 TF, EJ!

1683. Emigration Creek north of Emigration Campground. Zone 12: 454,600E 4,690,900N. SW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 21, T12S R42E, Midnight Mtn. quad., Bear Lake, Idaho. Emigrant Cr.-Ovid Cr.-Bear R.-Great Salt Lk., Bear River Range. Emigration Creek just W of ID36 and 0.1 mi. N of turnoff to Emigration Campground, Cache National Forest. Elev. 7080'. Depth 2-4". Spring-fed head of large creek; sand, gravel, and cobble substrate (mixed lithologies); no macrophytes; shallow and unstable channel. Hand collection. No mollusks. 6/23/1993 TF, EJ!

1684. Benson Springs. Zone 12: 330,620E 4,719,510N. NW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> sec. 28, T9S R29E, Badger Peak quad., Power, Idaho. Fall Cr.-Snake R., Snake River Plain. Benson Springs S. of road to Domesea Farms Hatchery, ca. 0.4 mi. W of Fall Creek Road on Benson Springs Road. Elev. 4400'. Depth 4-18". Large cold spring; mud, sand, and basalt/till gravel substrate; abundant *Rorippa*, common *Veronica*, local *Chara*. Abundant *Pyrgulopsis* and very common *Fluminicola "hindsi"*; moderately grazed. 5/2/1992 TF, EJ!

1685. Foster Creek spring. Projected; NW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> sec. 28, T9S R29E, Mapleton quad., Franklin, Idaho. Foster Creek-Cub R.-Bear R., Bear River Range. Small cold spring on E. side of Foster Creek above Foster Creek Road (FS109), ca. 2.2 mi. E. of Cub River Road (FS406),

Cache National Forest. Elev. 5520'. Depth 0-1". Very shallow, clear, and cold small spring and seeps; mud and scattered gravel and cobble substrate; rare *Rorippa*; open, in forest clearing. Not on USGS map. Hand and dip net collection. Rather rare *Lyogyrus*. 6/8/1992 TF, EJ!

1686. South Leigh Creek. Zone 12: 483,920E 4,848,160N. NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> sec. 6, T5S R45E, Tetonia quad., Teton, Idaho. S. Leigh Cr.-Leigh Cr.-Teton R.-Henrys Fk.-Snake R.-Columbia R., Teton. Small creek on E side of county road, ca. 0.5 mi. N of junction with Cache Bridge Road. Elev. 5973'. Depth 2-10". Small, spring-fed more or less cold, clear creek, moderate velocity; mud substrate; no macrophytes. Heavy agricultural impact; no live mollusks. Hand and dip net collection. 9/22/1991 TF, EJ!

1687. Teton River at ID33 bridge. Zone 12: 481,360E 4,852,240N. NE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 26, T6S R44E, Tetonia quad., Teton, Idaho. Teton R.-Henrys Fk.-Snake R.-Columbia R., Teton Basin. Teton River at ID33 bridge, on S. side of bridge, ca. 4.4 mi. W. of Tetonia, RM 51.5. Elev. 5928'. Depth 6-38". Medium-sized, relatively unimpacted river; moderate velocity, slight turbidity, cold; abundant *Potamogeton filiformis*, *Ceratophyllum*; mud, sand, and gravel substrate. Perhaps Taylor T59-58 and Gregg 7882 site (NW<sub>1/4</sub> sec. 26, T6N R44E). Rare *Pyrgulopsis*, uncommon *Fluminicola "hindsii"*, common large *Sphaerium*. 9/22/1991 TF, EJ!

1688. Teton River at Cache Bridge. Zone 12: 483,180E 4,847,440N. NW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 12, T5S R44E, Tetonia quad., Teton, Idaho. Teton R.-Henrys Fk.-Snake R.-Columbia R., Teton Basin. Teton River at Cache Bridge, on S. side of bridge, W. side of river, at S. side public access, ca. 2.6 mi. W. of site of Cache, RM 56.3. Elev. 5955'. Depth 6-38". Medium-sized, relatively unimpacted river; moderate velocity, clear, cold; macrophytes (*Potamogeton filiformis*, *Myriophyllum*, *Rorippa*) near shore; sand-cobble (red basalt) substrate. Abundant *Pyrgulopsis* on rocks and sand; common *Fluminicola "hindsii"*, sphaeriids; dip net, brush and tray collection. 9/22/91 TF, EJ!

1689. Williams Creek below Williams Spring. Zone 12: 445,400E 4,689,300N. SE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 28, T12S R41E, Oneida Narrows Reservoir quad., Franklin, Idaho. Williams Cr.-Bear R.-Great Salt Lk., Williams Canyon. Williams Creek collected ca. 0.25 mi. downstream from Williams Spring, N. of Williams Creek Road (FS441), ca. 3.5 mi. E. of ID34. Elev. 5540'. Depth 0-12". Very large, cold, spring-influenced creek; no macrophytes; cobble and sand substrate; large karst source spring. No mollusks. Hand and dip net collection. 6/22/1993 TF, EJ!

1690. Slope south of Williams Creek. Zone 12: 445,260E 4,689,360N. SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 28, T12S R41E, Oneida Narrows Reservoir 1969 quad., Franklin, Idaho. Williams Cr.-Bear R.-Great Salt Lk., Williams Canyon. Forest on gentle slope, S. side of Williams Creek below Williams Creek Road (FS441), ca. 3.5 mi. E of ID34. Elev. 5940'. Ponderosa pine forest with rich soil; quartzite and limestone as scattered outcrops and pebbles. Significant deciduous element; above floodplain. Moderately grazed; hand collection. Sparse large *Oreohelix "strigosa depressa"*, rare *Allogona kochi occidentalis*. 06/22/1993 TF, EJ!

1691. Rock Springs 1. Zone 12: 368,425E 4,717,450N. NW<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 34, T9S R33E, Pauline quad., Power Co., Idaho. Bannock Cr.-Snake R.-Columbia R., Arbon Valley. N. most spring in the Rock Springs complex against Flatiron Hills, E. side of Arbon Valley, E. of Arbon Valley Road, ca. 2.4 mi. N. of Pauline. Elev. 4980'. Depth 0-6". Large spring now dredged to depth of 3'; *Rorippa* patches locally on E. end; common epiphytic algae elsewhere; *Typha* on W. edge; mud substrate elsewhere except at source (with limestone cobbles) at base of limestone hills. Abundant *Fluminicola "hindsii"*. Hand, tray, and dip net collections. 5/5/1992 TF, EJ! Abundant *Fluminicola "hindsii"*; *Pyrgulopsis* rare (possibly 2 forms) only at S. end of pool, where less impacted; rest dredged out and diverted to irrigation canal. Dip net, tray, and brush collections. 9/27/1992 TF, EJ!

1692. Rock Springs 2. Zone 12: 368,400E 4,717,360N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 34, T9S R33E, Pauline quad., Power Co., Idaho. Bannock Cr.-Snake R.-Columbia R., Arbon Valley. Small middle spring in the Rock Springs complex against Flatiron Hills, E. side of Arbon Valley, W. and below Arbon Valley Road, ca. 2.3 mi. N. of Pauline. Elev. 4990'. Depth 2-4". Cold spring, now dredged and diverted into irrigation ditch; *Rorippa*-covered; mud substrate; collected below road embankment. Not shown on USGS map. *Pyrgulopsis* abundant; one species (small); lymnaeids common. 9/27/1992 TF, EJ!

1693. Rock Springs 3. Zone 12: 368,380E 4,717,300N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 34, T9S R33E, Pauline quad., Power Co., Idaho. Bannock Cr.-Snake R.-Columbia R., Arbon Valley. South spring in the Rock Springs complex against Flatiron Hills, E. side of Arbon Valley, W. and below Arbon Valley Road, ca. 2.25 mi. N. of Pauline. Elev. 4990'. Depth 4-8". Medium-sized cold spring run emerging from under Arbon Valley Road from drainage pipe; channel *Rorippa*-covered; sand-gravel substrate. Very abundant *Pyrgulopsis*, apparently 2 species, small form abundant, big form rare; common *Fluminicola* "hindsii". Dip net; brush and tray collections. Spring diverted into irrigation ditch; collected below culvert. 5/5/1992 TF, EJ! Very abundant *Pyrgulopsis*, 2 species (attempted to recollect for the big rare form); common *Fluminicola* "hindsii". Dip net; brush and tray collections. 9/27/1992 TF, EJ!

1772. Swan Lake Creek 1. Zone 12: 419,440E 4,692,640N. NE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 14, T12S R38E, Cottonwood Peak quad., Bannock Co., Idaho. Swan Lk. Cr.-Deep Cr.-Bear R.-Great Salt Lk., Portneuf Range. Small spring above curve in Lone Pine Road, ca. 0.5 mi. from junction with Swan Lake Creek Road. Elev. 6120'. Dry spring, heavily grazed. No mollusks. 6/22/1993 TF, EJ!

1773. Swan Lake Creek 2. Zone 12: 419,560E 4,692,610N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 14, T12S R38E, Cottonwood Peak quad., Bannock Co., Idaho. Swan Lk. Cr.-Deep Cr.-Bear R.-Great Salt Lk., Portneuf Range. Small spring above Lone Pine Road and 0.1 mi. E. of locality 1772. Elev. 6140'. Dry spring, heavily grazed. No mollusks. 6/22/1993 TF, EJ! o

1774. Swan Lake Creek 3. Zone 12: 419,460E 4,692,430N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 14, T12S R38E, Cottonwood Peak quad., Bannock Co., Idaho. Swan Lk. Cr.-Deep Cr.-Bear R.-Great Salt Lk., Portneuf Range. Small spring above ca. 0.23 mi. NE of sharp curve in Lone Pine Road, ca. 0.5 mi. from junction with Swan Lake Creek Road. Elev. 5990'. Dry spring; heavily grazed. No mollusks. 6/22/1993 TF, EJ!

1775. Swan Lake Creek 4. Zone 12: 419,410E 4,691,780N. Center NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 14, T12S R38E, Cottonwood Peak quad., Bannock Co., Idaho. Swan Lk. Cr.-Deep Cr.-Bear R.-Great Salt Lk., Portneuf Range. Spring run on N. side of Swan Lake Creek Road, ca. 4.9 mi. NE of Swan Lake. Elev. 5680'. Depth 0-2". Moderate-sized cold spring run and spring, very shallow; common *Rorippa*. Moderately grazed. Common *Pyrgulopsis*. Hand and dip net collections. 6/22/1993 TF, EJ!

1776. Swan Lake Creek 5. Zone 12: 420,980E 4,692,420N. SW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 13, T12S R39E, Cottonwood Peak quad., Bannock Co., Idaho. Swan Lk. Cr.-Deep Cr.-Bear R.-Great Salt Lk., Portneuf Range. Spring and run just E. of Swan Lake Creek Road, ca. 0.5 mi. NE of last bridge over Swan Lake Creek. Elev. 6160'. Depth 2-6". Mud and gravel substrate; no macrophytes. No freshwater mollusks-rare dead *Oreohelix* (hand collected). 6/22/1993 TF, EJ!

1923. Corduroy Spring. Zone 12: 456,100E 4,670,260N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 22, T14S R42E, Paris Peak quad., Bear Lake Co., Idaho. Bloomington Cr.-Bear Lk.-Bear R.-Great Salt Lk., Bear River Range. Corduroy Spring, ca. 0.15 mi. N. of Bloomington Creek Road (FS409),

near headwaters of Bloomington Creek on N. side of creek, Cache National Forest. Elev. 7080'. Depth 2-4". Large cold oligotrophic spring; no macrophytes; boulder-cobbles substrate (partly limestone). One of the main sources to Bloomington Creek. Cache National Forest, administered by Caribou National Forest. No mollusks except rare sphaeriids. Hand and dip net collections. 6/24/1993 TF, EJ!

1955. Canyon Creek at Meadow Creek Road bridge. Zone 12: 477,630E 4,935,160N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 5, T14N R44E, Big Springs quad., Fremont Co., Idaho. Canyon Cr.-Henrys Fork-Snake R.-Columbia R., Henrys Lake Mountains. Meadow Creek Road bridge crossing of Canyon Creek. Elev. 6460'. Depth 1-3". Small cold creek with cobble bottom; no epiphytic algae or macrophytes. Cold; clear; fast. No mollusks found. Gradient too steep? 8/23/1994 JEJ!

1956. Enget Creek at Meadow Creek Road bridge. Zone 12: 478,430E 4,933,780N. NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 9, T14N R44E, Big Springs quad., Fremont Co., Idaho. Enget Cr.-Henrys Fork-Snake R.-Columbia R., Henrys Lake Mountains. Meadow Creek Road bridge crossing of Enget Creek. Elev. 6440'. Depth 1-3". Small cold creek with mud-gravel bottom. No epiphytic algae or macrophytes. Cold; clear; fast. No mollusks found. Close to headwaters; steep gradient. 8/23/1994 JEJ!

1957. Big Springs run-west bank opposite cabin. Zone 12: 479,740E 4,927,250N. SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 34, T14N R44E, Big Springs quad., Fremont Co., Idaho. Henrys Fork-Snake R.-Columbia R., Henrys Fork. Big Springs complex on W. bank of N. spring run opposite John Sack Cabin, Targhee National Forest. Elev. 6390'. Depth 1-12". Very large cold spring run; mostly mud substrate; abundant macrophytes; minor epiphytic algae. Cold; clear; slow. Source spring to Henrys Fork. *Physella*, sphaeriids, odd-looking *Valvata*. Dip net collections. 8/23/1994 JEJ!

1958. Big Springs north spring. Zone 12: 479,790E 4,927,320N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 34, T14N R44E, Big Springs quad., Fremont Co., Idaho. Henrys Fork-Snake R.-Columbia R., Henrys Fk. N. spring of Big Springs on W. side of complex, NW of John Sack Cabin, Targhee National Forest. Elev. 6390'. Depth 0-48". Cold spring flowing from rock talus; cobble and mud substrate; some *Rorippa* and *Potamogeton filiformis* in channel. Cold; clear; somewhat swift. Source spring to Henrys Fork. Dip net collection. Common *Physella*. 8/23/1994 JEJ!

1959. Moose Creek. Zone 12: 481,650E 4,922,560N. E $\frac{1}{2}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 14, T13N R44E, Latham Spring quad., Fremont Co., Idaho. Moose Cr.-Henrys Fork-Snake R.-Columbia R. Moose Creek where Chick Creek Flat Road (FS292) crosses, E. bank of creek on both sides of road, Targhee National Forest. Elev. 6459'. Depth 12-48". Mud- and cobble-bottomed creek. Macrophytes and algae present. No mollusks; hand and dip net collections attempted. 8/23/1994 JEJ!

1960. Preston Springs run. Zone 12: 475,500E 4,903,200N. NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 18, T11N R44E, Hatchery Butte quad., Fremont Co., Idaho. Preston Springs Run-Warm R.-Henrys Fork-Snake R.-Columbia R. N. side of Preston Springs run at mouth of tributary spring, E. of old access road (cutoff of the Warm River Road (FS150)), over 0.2 mi. SE of site of Pineview (Pineview Siding), Targhee National Forest. Elev. 6120'. Depth 12-24". Combined run of multiple cold springs; cobble-gravel substrate; moderately fast and clear; macrophytes; abundant brown algae. Springs not named on USGS map; only source spring and run shown. No mollusks. Hand collections attempted. 8/23/1994 JEJ!

1961. Preston Springs spring west of spring in concrete box. Zone 12: 475,480E 4,903,220N. NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 18, T11N R44E, Hatchery Butte quad., Fremont Co., Idaho. Preston Springs run-Warm R.-Henrys Fork-Snake R.-Columbia R. Spring on N. side of Preston Springs run, E. of old access road (cutoff of the Warm River Road (FS150)) and W. of spring in

concrete box, over 0.2 mi. SE of site of Pineview (Pineview Siding), Targhee National Forest. Elev. 6120'. Depth 1-36". Cold spring with cobble-gravel substrate; moderately fast and clear; brown algae. Spring not shown on USGS map; only source spring and run shown, but not named. No mollusks. Hand collections attempted. 8/23/1994 JEJ!

1962. Preston Springs spring in concrete box. Zone 12: 475,480E 4,903,250N. NW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 18, T11N R44E, Hatchery Butte quad., Fremont Co., Idaho. Preston Springs Run-Warm R.-Henrys Fork-Snake R.-Columbia R. Spring in concrete box on N. side of Preston Springs run, E. of old access road (cutoff of the Warm River Road (FS150)), over 0.2 mi. SE of site of Pineview (Pineview Siding), Targhee National Forest. Elev. 6120'. Depth 24". Cold spring with cobble-rock substrate; slow and clear current. Spring not shown on USGS map; only source spring and run shown, but not named. No mollusks. Dip net collection attempted. 8/23/94 JEJ!

1963. Osborne Springs south spring. Zone 12: 467,520E 4,906,040N. SW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> sec. 5, T11N R43E, Last Chance quad., Fremont Co., Idaho. Fish Pond-Henrys Fork-Snake R.-Columbia R. Osborne Springs; south spring at campground, Targhee National Forest. Elev. 6130'. Depth 2-12". Cold spring with algae, macrophytes, and emergent plants; mud bottom with some cobbles. Very cold; clear; swift. Dip net collection. Sphaeriids only, not retained. 8/23/1994 JEJ!

1964. Penultimate east spring at Buffalo River headwaters. Zone 12: 479,440E 4,920,420N. NW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> sec. 21, T13N R44E, Island Park quad., Fremont Co., Idaho. Buffalo R.-Henrys Fork-Snake R.-Columbia R. Second E.-most of four unnamed springs on W. side of Chick Creek Flat Road (FS292) bridge crossing of Buffalo River, just below and opposite the confluence of Chick Creek. Elev. 6360'. Depth 0-2". Small cold spring with mud-cobble substrate; *Rorippa* cover. Cold, clear, moderate velocity. Hand collection. Common *Physella*. 8/23/1994 JEJ!

1997. Idaho. St. Joe R.-St. Maries R.-Coeur d'Alene R.-Spokane R.-Columbia R. St. Joe River 0.8 mi. upstream from river bridge near Falls Creek. River with slack water area of pool; good mix of boulders, gravels, and sand. Seven *Margaritifera falcata* specimens hand collected. Mussels half buried. 07/19/1994 DCMO!

1998. Idaho. E. Fk. Emerald Cr.-Emerald Cr.-St. Maries R.-Coeur d'Alene R.-Spokane R.-Columbia R., Clearwater Mountains. East Fork Emerald Creek below crossing of FS477 bridge (Emerald Creek Road) near USGS gauging station. Cold creek with riffle and pool habitat; mainly cobble sized substrate, but sand, fines also abundant. Four *Margaritifera falcata* hand collected. 07/19/1994 DCMO!

1999. Idaho. Coeur d'Alene R.-Spokane R.-Columbia R. Coeur d'Alene River. River run; boulder, bedrock embedded in sand and gravel. Three *Margaritifera falcata* and two *Physella* sp. hand collected. 08/25/1994 ELHT!

2006. Kincade Ranch springs-east (large) spring. Zone 12: 294,910E 4,682,400N. SW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 25, T13S R25E, Nibbs Creek quad., Cassia, Idaho. Cassia Cr.-Raft R.-Snake R.-Columbia R., Jim Sage Mountains. Small unnamed spring on NE side of hill, Kincade Ranch, W. end of Jim Sage Mountains. Elev. 5060'. Depth 0-2". Small cold spring with mud-scattered cobble (quartzite and limestone) substrate; common *Rorippa*. Moderately grazed; dug out at source. Abundant small *Pyrgulopsis*; dip net and hand collections. 8/22/1994 TF, EJ!

2007. Kincade Ranch springs-west (small) spring. Zone 12: 294,880E 4,682,400N. SW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 25, T13S R25E, Nibbs Creek quad., Cassia, Idaho. Cassia Cr.-Raft R.-Snake R.-Columbia R., Jim Sage Mountains. Very small unnamed cold spring ca. 100' w. of locality 2005, Kincade Ranch, NE end of Jim Sage Mountains. Elev. 5056'. Depth 0-2". Very small spring with

mud-scattered quartzite and limestone substrate; uncommon *Rorippa*. Strongly grazed. Uncommon *Pyrgulopsis*. Dip net and hand collections. 8/22/1994 TF, EJ!

2008. BLM 430248017. Zone 12: 294,620E 4,682,350N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 25, T13S R25E, Nibbs Creek quad., Cassia, Idaho. Cassia Cr.-Raft R.-Snake R.-Columbia R., Jim Sage Mountains. Small unnamed spring on S. side of small canyon above Kincade Ranch springs, ca. 0.2 mi. SW, NE end of Jim Sage Mountains. BLM lands. Elev. 5280'. Depth 0-3". Small cold spring with mud-sand-scattered quartzite cobble substrate; common *Rorippa*. Not on USGS map. Moderately heavily grazed. Rare *Pyrgulopsis*; dip net and hand collections. 8/22/1994 TF, EJ!

2009. BLM 430248018. Zone 12: 294,460E 4,682,500N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 26, T13S R25E, Nibbs Creek quad., Cassia, Idaho. Cassia Cr.-Raft R.-Snake R.-Columbia R., Jim Sage Mountains. Spring on W. side of gully above, ca. 0.3 mi. W. of Kincade springs, NE end of Jim Sage Mts. BLM lands. Elev. 5080'. Depth 0-3". Medium-sized unnamed cold spring run; mud-sand-scattered cobble (quartzite) substrate; common *Rorippa*. Not shown on USGS map. Moderately grazed; common *Pyrgulopsis*. 8/22/1994 TF, EJ!

2010. Cassia Creek. SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 23, T13S R25E, Connors Ridge quad., Cassia, Idaho. Cassia Cr.-Raft R.-Snake R.-Columbia R. Cassia Creek on E. side of bridge of Elba-Almo Highway, ca. 1.0 mi. W. of Connor. Depth 2-8". Medium-sized spring-fed creek; mud-gravel substrate; no macrophytes. Somewhat cold; slightly turbid; slow. Moderate agricultural impact. Common *Physella*; rare *Ferrissia*; hand-collected. 8/22/1994 TF, EJ!

2011. Unnamed spring, Jim Sage Mountains 1. Zone 12: 295,760E 4,680,840N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 36, T13S R25E, Nibbs Creek quad., Cassia, Idaho. Cassia Cr.-Raft R.-Snake R.-Columbia R. Small unnamed spring in gully to NW of access road; ca. 2.6 mi. SE from Kincade Ranch house. State of Idaho lands. Elev. 4990'. Cold spring with abundant *Lemna*; rare *Rorippa*; mud-scattered cobble substrate. Heavily grazed; no mollusks. Dip net collection. 8/22/1994 TF, EJ!

2012. Unnamed spring, Jim Sage Mountains 2. Zone 12: 295,910E 4,680,900N. SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 36, T13S R25E, Nibbs Creek quad., Cassia, Idaho. Cassia Cr.-Raft R.-Snake R.-Columbia R. Small unnamed spring in pasture NW of access road, ca. 2.5 mi. SE of Kincade Ranch house and SE of gully. State of Idaho lands. Elev. 5180'. Depth 0-2". Somewhat cold spring with mud substrate; no macrophytes. Badly grazed; no mollusks. 8/22/1994 TF, EJ!

2013. Unnamed spring, Jim Sage Mountains 3. Zone 12: 295,730E 4,680,900N. SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 36, T13S R25E, Nibbs Creek quad., Cassia, Idaho. Cassia Cr.-Raft R.-Snake R.-Columbia R. Small unnamed spring W. of gully, ca. 2.6 mi. SE of Kincade Ranch house. State of Idaho lands. Elev. 5195'. Depth 0-3". Small cold spring with mud-sand-gravel substrate; uncommon *Rorippa*, common epiphytic algae. Common *Pyrgulopsis*; dip net collections. Collected near source. Moderately heavily grazed. 8/22/1994 TF, EJ!

2014. Unnamed spring south of McClenden Spring. Zone 12: 300,520E 4,686,840N. NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 9, T13S R26E, Nibbs Creek quad., Cassia, Idaho. Raft R.-Snake R.-Columbia R., Cotterel Mountains. Unnamed small spring on NW side of BLM access road 2.25 mi. S. of McClenden Spring. Elev. 4937'. Depth 0-2". Small, somewhat cold spring run; mud substrate; traces of *Rorippa*; no epiphytic algae. Mostly capped; badly grazed despite fencing. No mollusks. 8/22/1994 TF, EJ!

2015. McClenden Spring. Zone 12: 301,830E 4,689,660N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 34, T12S R26E, Nibbs Creek quad., Cassia, Idaho. Raft R.-Snake R.-Columbia R., Cotterel Mountains. McClenden Spring in Populus grove 3 mi. NW of Malta and 3.0 mi. N. of ID 77. BLM.

Elev. 4845'. Depth 0-4". Small cold spring run with common *Rorippa*; mud, sand, and gravel substrate. Abundant *Pyrgulopsis*; dip net collections. In BLM recreation area, partially protected. Somewhat modified. Vinyard 930803-15?. 8/8/1994 TF, EJ!

2016. Wolverine Creek. Zone 12: 427,950E 4,794,660N. SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 28, T1S R39E, Wolverine quad., Bingham, Idaho. Wolverine Cr.-Blackfoot R.-Snake R.-Columbia R., Blackfoot Mountains. Wolverine Creek to N. of Wolverine Creek Road, ca. 12 mi. NW of Bone. Elev. 6220'. Depth 0-4". Open cold creek; no macrophytes; mud, sand, scattered cobble (limestone) substrate. Very cold; clear; moderate velocity. No mollusks. 8/23/1994 TF, EJ!

2017. Wolverine Creek unnamed spring 1. Zone 12: 425,140E 4,793,440N. Projected from NW corner; SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 31, T1S R39E, Wolverine quad., Bingham, Idaho. Wolverine Cr.-Blackfoot R.-Snake R.-Columbia R., Blackfoot Mountains. Small unnamed spring NW of Wolverine Creek Road, ca. 1.1 mi. NE of Wolverine. Elev. 5750'. Depth 0-2". Small cold spring with mud, scattered limestone cobbles; common *Rorippa*. Cold; clear; slow. Spring not on USGS map. Partly piped; badly grazed. Common *Fossaria*; rare sphaeriids. 8/23/1994 TF, EJ!

2018. Wolverine Creek unnamed spring 2. Zone 12: 427,080E 4,794,005N. SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 28, T1S R39E, Wolverine quad., Bingham, Idaho. Wolverine Cr.-Blackfoot R.-Snake R.-Columbia R., Blackfoot Mountains. Small unnamed spring and run NW of Wolverine Creek Road, ca. 2.5 mi. NE of Wolverine. Elev. 6045'. Depth 0-4". Small cold spring with mostly mud substrate; abundant *Rorippa*. Spring not on USGS map. Badly grazed. Common *Physella*. Dip net collection. 8/23/1994 TF, EJ!

2019. Wolverine Basin talus. Zone 12: 423,130E 4,792,320N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 1, T2S R38E, Wolverine 1981 quad., Bingham, Idaho. Wolverine Cr.-Blackfoot R.-Snake R.-Columbia R., Blackfoot Mountains. E.-facing talus N. of Wolverine Creek Road just above The Narrows and W. of mouth of Wolverine Basin, ca. 0.9 mi. below Wolverine. Elev. 5440'. Brushy talus (*Celtis*, *Rosa*, grasses) with limestone cobbles and pebbles. Common large *Oreohelix* "strigosa depressa"-SE Idaho form, mostly bandless. Talus is partly grazed, with snails common in protected areas. 08/23/1994 TF, EJ!

2020. Wolverine Creek unnamed spring 3. Zone 12: 420,580E 4,790,520N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 11, T2S R38E, Wolverine quad., Bingham, Idaho. Wolverine Cr.-Blackfoot R.-Snake R.-Columbia R., Blackfoot Mountains. Small spring at lower entrance to The Narrows on E. side of Wolverine Creek Road. Elev. 5080'. Depth 0-8". Small cold spring with mud and limestone cobble substrate; *Rorippa*-covered above pond. Cold; clear; moderate velocity. Modified by berm above creek and pipe at SW end. Very common *Pyrgulopsis*; dip net collection. 8/23/1994 TF, EJ!

2021. Blackfoot River near Trail Creek Bridge. Zone 12: 425,870E 4,775,550N. E $\frac{1}{2}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 29, T3S R39E, Miner Creek quad., Bingham Co., Idaho. Blackfoot R.-Snake R.-Columbia R. NE side of Blackfoot River, NW 0.15 mi. from Trail Creek Bridge, RM 45.9. Elev. 5490'. Depth 4-21". Basalt cobbles, sand, and mud substrate; common *Ceratophyllum* and *Potamogeton filiformis*, abundant epiphytic algae. Cold; slightly turbid; swift. *Fluminicola*, *Stagnicola*, *Physella*, and sphaeriids; dip net collections. Water level high. Somewhat eutropified. Very abundant dead shells. 8/23/1994 TF, EJ!

2022. Henrys Fork at Riverside Campground. Zone 12: 463,820E 4,901,820N. NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 24, T11N R42E, Last Chance quad., Fremont Co., Idaho. Henrys Fork-Snake R.-Columbia R., Snake River Plain. W. side of Henrys Fork at Riverside Campground (Targhee National Forest), ca. 1.3 mi. SE of US20/I91. Elev. 6010'. Depth 2-20". Medium-sized, somewhat eutrophic river; mostly basalt boulders and cobble substrate with some mud and sand; common

epiphytic algae; local dense beds of *Elodea* (2 spp.), *Potamogeton crispus*, *Potamogeton filiformis*, *Ceratophyllum*. Cold, clear, and swift. Common *Stagnicola hinkleyi*; uncommon *Fluminicola*, *Physella*, sphaeriids, and *Valvata*. Hand and dip net collections. Somewhat nutrient-enriched. Cold, clear, moderate velocity. 8/24/1994 TF, EJ, JJ!

2023. Big Springs south of John Sack Cabin. Zone 12: 479,820E 4,927,100N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 34, T14N R44E, Island Park quad., Fremont Co., Idaho. Henrys Fork-Snake R.-Columbia R., Henrys Fork. Large spring pool and source spring run just S. of John Sack Cabin, E. side of Big Springs complex, E. of ID84, Targhee National Forest, toward N. end of Big Springs Campground. Elev. 6395'. Depth 4-18". Mud, sand, obsidian gravel and rare cobbles; locally dense *Potamogeton filiformis*; large cold spring pool with several small sources. Cold, clear, slow to moderate velocity. Source spring to Henrys Fork. Common *Fluminicola*, *Physella*; rare *Fossaria*, sphaeriids. Dip net and tray, dip net kick collections. Somewhat modified. 8/24/1994 TF, EJ, JJ!

2024. Big Springs south source spring. Zone 12: 479,780E 4,927,080N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 34, T14N R44E, Island Park quad., Fremont Co., Idaho. Henrys Fork-Snake R.-Columbia R., Henrys Fork. Large spring run at SE corner of Big Springs complex, Targhee National Forest, just E. of ID 84, at N. end of Big Springs Campground. Elev. 6395'. Depth 4-26". Travertine sand and gravel; mud, obsidian gravel; common epiphytic algae and *Potamogeton filiformis*, bryophytes. Very cold, clear, and swift. Source spring to Henrys Fork. Abundant *Stagnicola*, common *Physella*; uncommon *Gyraulus*, sphaeriids. Dip net and hand collections. 8/24/1994 TF, EJ, JJ!

2025. Elk Spring. Zone 12: 466,920E 4,925,760N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 5, T13N R43E, Island Park Dam quad., Fremont Co., Idaho. Elk Springs Cr.-Henrys Fork-Snake R.-Columbia R. Elk Spring to NW of Stamp Meadows Road, ca. 2.4 mi. NE of Kilgore-Yale Road, ca. 2.0 from Rea, W. of Henrys Fork, Targhee National Forest. Very cold, clear, slow. Elev. 6480'. Depth 2-4". Small cold spring and run; mud and cobble substrate; no epiphytic algae or macrophytes. No mollusks seen. Almost dry; heavily grazed. Dip net and hand collections attempted. 8/24/1994 TF, EJ, JJ!

2026. Unnamed spring tributary to Elk Springs Creek. Zone 12: 466,580E 4,925,430N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 6, T13N R43E, Island Park Dam quad., Fremont Co., Idaho. Elk Springs Cr.-Henrys Fork-Snake R.-Columbia R. Small unnamed spring tributary to Elk Springs Creek, ca. 0.1 mi. NW of Stamp Meadows Road (FS52), ca. 1.9 mi. N. of Kilgore-Yale Road (FS30), about 1.6 mi. NE of Rea, W. of Henrys Fork. Elev. 6460'. Depth 0-2". Small spring with mostly mud substrate, scattered cobbles; no epiphytic algae or macrophytes. Somewhat cold; slightly turbid; very slow. Spring not on USGS map. No mollusks. Dip net and hand collections attempted. Heavily grazed. 8/24/1994 TF, EJ, JJ!

2027. Otter Spring. Zone 12: 483,150E 4,888,760N. Projected from NE corner; SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 36, T10N R44E, Warm River Butte quad., Fremont Co., Idaho. Fish Cr.-Warm R.-Henrys Fork-Snake R.-Columbia R. Otter Spring just N. of main Fish Creek channel and S. of (below) Snow Creek Road (FS92), Targhee National Forest. Elev. 5790'. Depth 2-8". Small, very cold spring, adjacent deep pool; pool with mud substrate, abundant dead wood; source with quartzite cobbles and boulders; abundant bryophytes and local *Mimulus* and *Mertensia*. Very cold, clear, and slow. Site has only one spring (as shown on USGS map) despite name on USGS map. Uncommon large *Lyogyrus* at source only. Dip net and hand collections. Spring dug out and modified, grazed. 8/24/1994 TF, EJ, JJ!

2028. Nibbs Spring. Zone 12: 298,160E 4,687,660N. SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 6, T13S R26E, Nibbs Creek quad., Cassia Co., Idaho. Nibbs Cr.-Raft R.-Snake R.-Columbia R., Cotterel

Mountains. Nibbs Spring at head of Nibbs Creek, S. of Connor Creek Road, BLM. Elev. 5480'. Depth 0-4". Medium-sized cold spring with mostly mud substrate; scattered *Rorippa*. Common *Physella*; uncommon *Fossaria*, sphaeriids. Dip net and hand collections (only *Physella* and sphaeriids retained). Mostly capped by BLM; badly grazed. 8/22/1994 TF, EJ!

2029. Cress Creek spring run. Zone 12: 442,590E 4,833,720N. NE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> sec. 23, T4N R40E, Heise quad., Madison Co., Idaho. Cress Cr.-Snake R.-Columbia R., Big Hole Mountains. Cress Creek spring run on E. side of BLM Cress Creek Nature Trail, above Snake River, NW of Heise Bridge. Elev. 5140'. Depth 2-8". Medium-sized cold spring-influenced creek; abundant *Rorippa*; mud and cobble (mixed igneous lithologies; rhyolite most abundant) substrate. Somewhat cold; slightly turbid; moderate velocity. Uncommon sphaeriids, *Physella*, *Oxyloma*; dip net collections. Formerly grazed heavily, now protected. Perched on bluff above Snake R. 8/25/1994 TF, EJ, JJ!

2030. Hawley Gulch Southeast. Zone 12: 443,310E 4,832,880N. SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 25, T 4 N R 40 E, Heise 1979 quad., Jefferson Co., Idaho. Snake R.-Columbia R., Big Hole Mountains. SW-facing talus slope to NE of Snake River Road, ca. 0.2 mi. NW of Heise Road bridge (FS206) and 0.1 mi. SE of mouth of Hawley Gulch. Elev. 5000-5020'. Rather open silty talus slope (mixed igneous lithologies); *Celtus*, *Ribes*, *Rosa*, and grasses. Common large *Oreohelix "strigosa depressa"*, most submature. Hand collected. Talus affected by road building. 08/25/1994 TF, EJ, JJ!

2031. Hawley Warm Spring run. Zone 12: 443,240E 4,833,000N. SW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 25, T 4 N R 40 E, Heise quad., Jefferson Co., Idaho. Snake R.-Columbia R., Big Hole Mountains. Run from Hawley Warm Spring, just NE of Snake River Road, ca. 0.35 mi. NW of Heise Road bridge (FS206); spring is ca. 0.4 mi. NE on steep bluff. Elev. 5000'. Depth 2-6". Small-moderate-sized spring run. Mostly mud, with mixed igneous cobbles; no algae or macrophytes. Somewhat cold, clear, and swift. Run seems comparatively cold, despite spring name. No mollusks, although seems relatively unimpacted. Dip net collection. 8/25/1994 TF, EJ, JJ!

2032. Unnamed Kelly Canyon spring. Zone 12: 448,000E 4,832,020N. SE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 28, T4N R41E, Heise quad., Jefferson Co., Idaho. Kelly Canyon Cr.-Snake R.-Columbia R., Big Hole Mountains. Unnamed spring to SE of (run now parallel to) Kelly Canyon Road (FS218), ca. 1.3 mi. from junction with Heise Road (FS206), on NW flank Kelly Mountain. Elev. 5500'. Depth 0-6". Very small spring run with basalt cobbles, mud, sand; *Rorippa*-covered. Cold; clear; moderate velocity. Spring not on USGS map. Abundant small *Lyogyrus*; dip net and tray collections. Spring impacted heavily by road building. 8/25/1994 TF, EJ, JJ!

2033. Kelly Canyon tributary spring. Zone 12: 447,320E 4,831,760N. Center W<sub>1/2</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> sec. 32, T4N R41E, Heise quad., Jefferson Co., Idaho. Kelly Canyon Cr.-Snake R.-Columbia R., Big Hole Mountains. Unnamed spring run in first major tributary to Kelly Canyon (from mouth) on NW side, ca. 1.1 mi. NE of junction of Kelly Canyon Road (FS218) with Heise Road (FS206). Elev. 5320'. Depth 0-4". Broad shallow cold spring run; mud, common basalt cobble substrate; no macrophytes; partially shaded by riparian forest. Cold; clear; slow. Hand and dip net collection. *Physella* and sphaeriids only; not collected. Moderately grazed. 10/27/1990 TF, EJ!

2034. Kelly Canyon northwest talus. Zone 12: 447,380E 4,831,770N. NE<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 32, T4N R41E, Heise 1979 quad., Jefferson Co., Idaho. Kelly Canyon Cr.-Snake R.-Columbia R., Big Hole Mountains. S.-facing rock talus on NE side of major tributary of Kelly Canyon, ca. 1.1 mi. up from mouth of Kelly Canyon, W. of Kelly Canyon Road (FS218). Elev. 5320'. Shallow, open, and dry basalt talus, mostly open and grassy; local *Celtus*. Uncommon live *Oreohelix "strigosa depressa"* hand collected. Impacted by use as trash disposal area, quarrying for road fill. 10/27/1990 TF, EJ, JJ!

2035. Kelly Canyon southeast talus. Zone 12: 447,460E 4,831,670N. NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 32, T4N R41E, Heise 1979 quad., Jefferson Co., Idaho. Kelly Canyon Cr.-Snake R.-Columbia R., Big Hole Mountains. NW-facing rock talus across from first major tributary canyon to Kelly Canyon, ca. 1.2 mi. up Kelly Canyon Road (FS218) from mouth. Elev. 5340'. Shaded, mossy, large-scale cobble and boulder (basalt) talus. Common *Oreohelix "subrudis"*; rarer *Allogona kochi occidentalis*. Hand collected. 10/27/1990 TF, EJ!

2036. Heise southeast. Zone 12: 445,680E 4,831,400N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 31, T4N R41E, Heise 1979 quad., Jefferson Co., Idaho. Snake R.-Columbia R., Big Hole Mountains. On SE side of prominent short cliff (rhyolite?) to N. of Heise Road (FS206), ca. 0.75 mi. SE of Heise. Elev. 5020'. Base of rhyolite cliff; dry, open, local *Clematis*, *Rhus diversiloba*; snails in shallow talus. Uncommon large *Oreohelix "strigosa depressa"* (Idaho form) live; common dead. Hand collected. Cliff extensively used by local climbers; trash common. 10/27/1990 TF, EJ!

2037. Kelly Spring. Zone 12: 450,030E 4,832,220N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 27, T4N R41E, Hawley Gulch quad., Madison Co., Idaho. Kelly Canyon Cr.-Snake R.-Columbia R., Big Hole Mountains. Kelly Spring run on SW side of Kelly Canyon Road (FS218), upper Kelly Canyon, ca. 0.6 mi. NW of junction with Hawley Gulch and Table Canyon Road (FS217), N. flank of Kelly Mountain. Elev. 5960'. Depth 0-2". Shaded, very small cold spring run with common *Ribes*, *Aconitum*, and *Acer*; rare epiphytic algae; mud, gravel, and cobble substrate. Very cold; slightly turbid; slow. Very rare *Lyogyrus*; dip net and hand collections. Impacted by road building. 8/25/1994 TF, EJ, JJ!

2038. Cold Spring. Zone 12: 454,780E 4,832,890N. SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 30, T4N R42E, Hawley Gulch quad., Madison Co., Idaho. Hawley Gulch Cr.-Table Rock Gulch Cr.-Snake R.-Columbia R., Big Hole Mountains. Cold Spring at E. head of Hawley Gulch, S. side of FS218, ca. 0.9 mi. E. of Hawley Gulch Guard Station. Elev. 6315'. Depth 0-4". Open grassy meadow; cold spring dug out and capped at source; mud and rare cobble substrate; common epiphytic algae; no macrophytes. Dip net collection. Sphaeriids only; not retained. Heavily grazed; mostly capped. 8/25/1994 TF, EJ, JJ!

2039. Hawley Gulch spring run. Zone 12: 453,710E 4,832,980N. Center NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 25, T4N R41E, Hawley Gulch quad., Madison Co., Idaho. Hawley Gulch Cr.-Table Rock Gulch Cr.-Snake R.-Columbia R., Big Hole Mountains. Spring run at junction of NW and E. heads of Hawley Gulch, S. of FS218, ca. 0.4 mi. S. of Hawley Gulch Guard Station. Elev. 6160'. Depth 2-12". Cold spring-fed creek with mud, sand, gravel, and rare cobble substrate. No macrophytes; epiphytic algae locally. Uncommon large *Lyogyrus*; dip net and hand collections. Moderately grazed. 8/25/1994 TF, EJ!

2040. Hawley Gulch unnamed spring. Zone 12: 452,920E 4,833,720N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 24, T4N R41E, Hawley Gulch quad., Madison Co., Idaho. Hawley Gulch Cr.-Table Rock Gulch Cr.-Snake R.-Columbia R., Big Hole Mountains. Small unnamed spring on N. side of Hawley Gulch, N. of FS218, ca. 0.8 mi. NW of Hawley Gulch Guard Station. Elev. 6320'. Depth 0-2". Remnants of a cold spring with mud and cobble substrate; no algae or macrophytes. No mollusks. Heavily grazed despite crude fence. Hand, dip net collections at source. 8/25/1994 TF, EJ, JJ!

2041. Buckhorn Spring. Zone 12: 451,510E 4,831,510N. NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 35, T4S R41E, Hawley Gulch quad., Madison Co., Idaho. Table Rock Cr.-Snake R.-Columbia R., Big Hole Mountains. Head spring near head of Table Rock Canyon, ca. 0.3 mi. along (SE) on Table Rock Canyon Road (FS217) from junction with Hawley Gulch and Kelly Canyon Road (FS218). Elev. 6120'. Depth 0-6". Small spring and run; mud and cobble (basalt) substrate; no algae or

macrophytes. Very cold; slightly turbid; slow. Very rare *Lyogyrus*; dip net and hand collections. Moderately grazed area. 8/25/1994 TF, EJ, JJ!

2042. Talus above Black Canyon. Zone 12: 462,800E 4,826,320N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 13, T3N R42E, Wheaton Mtn. 1966 quad., Bonneville Co., Idaho. Snake R.-Columbia R., Big Hole Mountains. W-facing conglomerate talus on E side of Snake River above RM 874.1, 0.2 mi. N. of mouth of Black Canyon, just above access road. Elev. 5200'. Comparably dry open talus with *Celtis*, *Rosa*, grasses in patches; mostly pebble and cobble talus with some alluvium. Common large *Oreohelix "strigosa depressa"* hand collected. 08/26/1994 TF, EJ, JJ!

2043. Mouth of Black Canyon Creek. Zone 12: 462,820E 4,825,990N. SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 13, T3N R42E, Wheaton Mtn. 1966 quad., Bonneville Co., Idaho. Black Canyon Creek-Snake R.-Columbia R., Big Hole Mountains. Near mouth of Black Canyon Creek, N. side, along fence line, E. side of Snake River above RM 874.2. Elev. 5150'. Depth 0-2". Spring-fed moderate-sized creek; cobble (limestone) substrate (minor mud); no macrophytes. Hand collection. No mollusks. 08/26/1994 TF, EJ, JJ!

2044. Unnamed spring southeast of Warm Springs. Zone 12: 462,800E 4,826,945N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 13, T3N R42E, Wheaton Mtn. quad., Bonneville Co., Idaho. Snake R.-Columbia R., Big Hole Mountains. Unnamed spring E. of N. end of oxbow pond ca. 0.25 mi. SE of Warm Springs, NE side of Snake River, above RM 873.8. Elev. 5110'. Depth 2-6". Medium-sized very cold spring run; abundant *Rorippa*, common *Veronica*; mud-gravel substrate. Abundant large *Pyrgulopsis*; uncommon *Physella*. Dip net and tray collections. Largely pristine spring (minor grazing). 8/26/1994 TF, EJ, JJ!

2045. Warm Springs-second from east end. Zone 12: 462,590E 4,827,170N. Center NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 12, T3N R42E, Wheaton Mountain. quad., Bonneville Co., Idaho. Snake R.-Columbia R., Big Hole Mountains. Spring on E. end of Warm Springs complex (2nd from E.), below (S. of) of Heise Road (FS206), N. side of Snake River at Fisher Bottom, above ca. RM 873.6, Targhee National Forest. Elev. 5160'. Depth 3-10". Medium-sized very cold spring with mostly cobble (limestone) substrate; abundant *Rorippa*, *Veronica*; common bryophytes. Uncommon small *Pyrgulopsis* on moss-covered rocks, mud pool, macrophytes. Dip net and tray collections. Essentially pristine spring. 8/26/1994 TF, EJ, JJ!

2046. Warm Springs-middle spring. Zone 12: 462,520E 4,827,220N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 12, T3N R42E, Wheaton Mountain. quad., Bonneville Co., Idaho. Snake R.-Columbia R., Big Hole Mountains. Center of Warm Springs complex, below (S. of) Heise Road (FS206), NE side of Snake River at Fisher Bottom, above ca. RM 873.5, Targhee National Forest. Elev. 5160'. Depth 4-14". Large cold spring with (primarily) gravel and cobble substrate at source; abundant bryophytes, *Rorippa*; common *Veronica*; uncommon *Chara* and *Potamogeton filiformis*; downstream, abundant *Potamogeton filiformis* and *Veronica*; gas bubbles common in run bed at source. Very cold; clear; swift. Common small *Pyrgulopsis*, uncommon *Physella*, especially on moss-covered rocks. Dip net and tray collections. Large pristine spring. 8/26/1994 TF, EJ, JJ!

2047. Mud Creek above Heise Road. Zone 12: 458,080E 4,828,410N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 9, T3N R42E, Heise SE quad., Bonneville Co., Idaho. Mud Cr.-Snake R.-Columbia R., Big Hole Mountains. Mud Creek to NE of Heise Road (FS206), ca. 0.75 mi. W. of Rattlesnake Point, N. side of Snake River at RM 862.3. Elev. 5000-5020'. Depth 0-6". Locally abundant *Rorippa* at base; short cliff with several small runs with travertine gravel; scattered cobbles; medium-sized spring-fed creek. Several dead hydrobiids seen; recollect. Several dead hydrobiids [identity indeterminate]; *Physella*, *Oxyloma*, *Deroberas*. Hand and dip net collections. Looks good ca. 0.5 mi. above mouth. 8/26/1994 TF, EJ, JJ!

2048. Wolverine Creek above Heise Road. Zone 12: 456,580E 4,829,050N. Projected from SW corner NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 5, T3N R42E, Heise SE quad., Bonneville Co., Idaho. Wolverine Cr.-Snake R.-Columbia R., Big Hole Mountains. Wolverine Creek from N. side of Heise Road (FS206) 300 yards upstream, ca. 2.0 mi. NW of Rattlesnake Point, N. side of Snake River above RM 861.3. Elev. 5110'. Depth 0-6". Mostly mud and cobble (limestone) substrate; no macrophytes; small cold creek run with small pools. Rare *Lyogyrus*. Hand collected. 8/26/1994 TF, EJ, JJ!

2049. Spring Creek (Wolf Flat). Zone 12: 450,680E 4,827,400N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 10, T3N R41E, Heise SE quad., Bonneville Co., Idaho. Spring Cr.-Snake R.-Columbia R. Spring Creek on Wolf Flat, ca. 1.8 mi. W. of Table Rock, N. of Heise Road (FS206), N. side of Snake River, above RM 857.1, BLM. Elev. 5060'. Depth 0-4". Mud substrate; abundant *Rorippa*; very abundant ostracods. Somewhat modified; riparian cold creek. Uncommon sphaeriids, common *Physella* (not collected). Dip net collection. 8/26/1994 TF, EJ, JJ!

2050. Trout Creek at McCoy Creek Road. , Alpine quad., Bonneville Co., Idaho. Trout Cr.-Snake R.-Columbia R., Caribou Range. Trout Creek W. of McCoy Creek Road (FS87), ca. 3.5 mi. NW of US89, W. side of Palisades Reservoir (Snake River). Depth 0-4". Shallow, small creek; cobble and mud substrate; no macrophytes. Very cold; slightly turbid; slow. No mollusks. Hand and dip net collections. Heavy agricultural impact. 8/27/1994 TF, EJ, JJ!

2051. McCoy Creek. [ ], Alpine quad., Bonneville Co., Idaho. McCoy Cr.-Snake R.-Columbia R., Caribou Range. N. side of McCoy Creek S. of McCoy Creek Road (FS87), ca. 1.3 mi. W. of Palisades Reservoir (Snake River). Depth 2-8". Medium-sized creek; boulder, cobble and minor fine substrate; common epiphytic algae; no macrophytes. Common *Stagnicola*; rare *Physella*. Hand and dip net collections. 8/27/1994 TF, EJ, JJ!

2052. McCoy Creek near mouth of Hell Creek. Zone 12: 486,760E 4,779,220N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 10, T3S R45E, Poker Peak 1966 quad., Bonneville Co., Idaho. McCoy Cr.-Snake R.-Columbia R., Caribou Range. E.-facing slope N. of McCoy Creek Road (FS87), ca. 0.2 mi. N. of mouth of Hell Creek. Open, dry limestone talus; mostly soil; grasses, sage, hackberry. Uncommon large *Oreohelix*. Area heavily grazed. 08/27/1994 TF, EJ, JJ!

2053. First creek east of Iowa Creek. Zone 12: 480,140E 4,776,980N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 24, T3S R44E, Poker Peak quad., Bonneville Co., Idaho. Unnamed Cr.-McCoy Cr.-Snake R.-Columbia R., Caribou Range. First small unnamed creek 0.1 mi. E. of Iowa Creek, collected S. of McCoy Creek Road. Elev. 6120'. Depth 0-1". Silt with scattered limestone cobbles; no macrophytes; rare epiphytic algae; open; grasses and sage. Rare *Lyogyrus*, in lower 100' on S. side of McCoy Cr. Rd. only. Grazing impacted. 8/27/1994 TF, EJ, JJ!

2054. Second creek east of Iowa Creek. Zone 12: 480,940E 4,776,790N. Center NW $\frac{1}{4}$  & NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 24, T3S R44E, Poker Peak quad., Bonneville Co., Idaho. Unnamed Cr.-McCoy Cr.-Snake R.-Columbia R., Caribou Range. Second small unnamed creek E. of Iowa Creek, ca. 0.2 mi., collected 0.25-0.40 mi. SE of McCoy Creek Road. Elev. 6200-6280'. Depth 0-4". Spring-fed small creek with limestone cobbles, sand, mud substrate; rare epiphytic algae; no macrophytes; common *Ribes*; open. Uncommon *Lyogyrus*; hand collected. Area heavily grazed. 8/27/1994 TF, EJ, JJ!

2055. Miners Delight Creek. Zone 12: 477,840E 4,770,540N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 23, T3S R44E, Big Elk Mountain. quad., Fremont Co., Idaho. Miners Delight Cr.-McCoy Cr.-Snake R.-Columbia R., Caribou Basin. Miners Delight Creek collected on W. side of McCoy Creek Road, ca. 1.6 mi. W. of Bald Mountain Guard Station, Caribou National Forest. Elev. 6280'. Depth 0-6". Small cold creek with common epiphytic algae; mud, silt, and limestone cobble substrate; banks open,

grassy, pasture with scattered *Salix* and *Cornus stolonifera*. *Physella* only; dip net and hand collections, specimens not retained. 8/27/1994 TF, EJ, JJ!

2056. Spring Creek. Zone 12: 470,740E 4,776,910N. Projected from NE corner; center SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 24, T3S R43E, Big Elk Mountain quad., Bonneville Co., Idaho. Spring Cr.-McCoy Cr.-Snake R.-Columbia R. Spring Creek collected S. of McCoy Creek Road, ca. 1.2 mi. NW of site of Keenan City, Caribou National Forest. Elev. 6710'. Depth 2-10". Small cold spring-fed creek; mud substrate; no algae or macrophytes. *Physella* only, rare; not collected. 8/27/1994 TF, EJ, JJ!

2057. Unnamed spring 1 northeast of Herman. Zone 12: 467,630E 4,778,540N. SW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 15, T3S R43E, Herman quad., Bonneville Co., Idaho. Unnamed Cr.-Greys Lk.-Greys Lk. Outlet-Willow Cr.-Snake R.-Columbia R., Caribou Range. Unnamed spring N. of Herman Road, ca. 1.9 mi. NE of site of Herman, Caribou National Forest. Elev. 6880'. Depth 0-4". *Rorippa*-covered small cold spring run; mud-silt bottom with rare basalt cobbles. Spring not on USGS map. Common *Lyogyrus*; hand and dip net collections. Area grazed. 8/27/1994 TF, EJ, JJ!

2058. Unnamed spring 2 northeast of Herman. Zone 12: 467,630E 4,778,480N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 15, T3S R43E, Herman quad., Bonneville Co., Idaho. Unnamed Cr.-Greys Lk.-Greys Lk. Outlet-Willow Cr.-Snake R.-Columbia R., Caribou Range. Unnamed small spring S. of Herman Road, ca. 1.9 mi. NE of site of Herman, Caribou National Forest. Elev. 6840'. Depth 0-2". *Rorippa* and *Veronica*-covered very small cold spring run; mud and scattered cobbles (basalt). Spring is S. of where it is shown on USGS map. Very rare *Lyogyrus*; hand and dip net collections. Grazing damage. 8/27/1994 TF, EJ, JJ!

2059. Unnamed spring 3 northeast of Herman. Zone 12: 467,540E 4,778,420N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 22, T3S R43E, Herman quad., Bonneville Co., Idaho. Unnamed Cr.-Greys Lk.-Greys Lk. Outlet-Willow Cr.-Snake R.-Columbia R., Caribou Range. Unnamed small spring S. of Herman Road, ca. 1.8 mi. NE of site of Herman. Elev. 6880'. Depth 0-2". *Rorippa*-covered medium-sized cold spring; mud, cobble substrate (basalt). Spring not on USGS map. Very common *Lyogyrus*; dip net and tray collections. Run somewhat modified. 8/27/1994 TF, EJ, JJ!

2060. Unnamed spring near Greys Lake Outlet. Zone 12: 460,260E 4,777,180N. Projected from NW corner; NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 13, T3S R42E, Herman quad., Bonneville Co., Idaho. Greys Lk. Outlet-Willow Cr.-Snake R.-Columbia R., Greys Lake. Small unnamed spring E. of Mann Road, ca. 1.9 mi. from Greys Lake Outlet gauging station (USGS). Elev. 6460'. Depth 0-1'. Grassy meadow; spring almost dry. No mollusks; hand and dip net collections attempted. Very heavily grazed. 8/27/1994 TF, EJ, JJ!

2061. Unnamed spring south of Herman. Zone 12: 468,590E 4,772,430N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 2, T4S R43E, Bear Island quad., Bonneville Co., Idaho. Greys Lk.-Greys Lk. Outlet-Willow Cr.-Snake R.-Columbia R., Greys Lake. Spring on W. side of Greys Lake Road, ca. 3.8 mi. S. of site of Herman. Elev. 6310'. Depth 0-4". Muddy substrate; abundant epiphytic algae; no macrophytes. No mollusks; hand and dip net collections attempted. Pastured; animal excrement abundant. 8/27/1994 TF, EJ, JJ!

2062. Unnamed spring north of Eagle Creek. Zone 12: 469,800E 4,768,300N. SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 13, T4S R43E, Caribou Mountain quad., Bonneville Co., Idaho. Eagle Cr.-Greys Lk.-Greys Lk. Outlet-Willow Cr.-Snake R.-Columbia R., Greys Lake. Unnamed spring on W. side of Greys Lake Road, ca. 7.6 mi. S. of site of Herman. Elev. 6410'. Depth 0-2". Mud substrate; no macrophytes or algae. No mollusks; hand and dip net collections attempted. Very heavily grazed, animal excrement abundant. Spring partially diverted into cattle trough. 8/27/1994 TF, EJ, JJ!

2063. Unnamed spring run east of Brockman Hot Spring. Zone 12: 459,920E 4,783,980N. SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> sec. 26, T2S R42E, Herman quad., Bonneville Co., Idaho. Brockman Cr.-Greys Lk. Outlet-Willow Cr.-Snake R.-Columbia R., Caribou Range. Unnamed spring run on E. side of Brockman Creek Road, 3.4 mi. SW of Brockman Guard Station. Depth 0-2". Small cold spring run; mud substrate; no macrophytes; common epiphytic algae; open, grassy. No mollusks; hand and dip net collections attempted. Area heavily grazed. 8/27/1994 TF, EJ!

2064. Brockman Hot Spring. Zone 12: 459,850E 4,783,990N. Center S<sub>1/2</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> sec. 26, T2S R42E, Herman quad., Bonneville Co., Idaho. Brockman Cr.-Greys Lk. Outlet-Willow Cr.-Snake R.-Columbia R., Caribou Range. Brockman Hot Spring W. of Brockman Creek Road, ca. 3.5 mi. from Brockman Guard Station. Elev. 6210'. Depth 2-4". Small warm spring; CO<sub>2</sub>, CaCO<sub>3</sub> deposits; abundant warm spring algae; no macrophytes; mud substrate. No mollusks. Heavily grazed. 8/27/1994 TF, EJ, JJ!

2065. First unnamed tributary to Brockman Creek. Zone 12: 466,850E 4,783,480N. W<sub>1/2</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> sec. 34, T2S R43E, Herman quad., Bonneville Co., Idaho. Unnamed Cr.-Brockman Cr.-Greys Lk. Outlet-Willow Cr.-Snake R.-Columbia R., Caribou Range. Unnamed tributary to Brockman Creek, 7.5 mi. W. of Caribou Basin Guard Station on Brockman Creek Road. Elev. 6510'. Depth 0-4". Small spring-fed creek; mud and cobble substrate; no macrophytes or epiphytic algae. No mollusks; hand and dip net collections attempted. Heavy sheep grazing. 8/27/1994 TF, EJ, JJ!

2066. Second unnamed tributary to Brockman Creek. Zone 12: 467,260E 4,782,900N. Projected from NW corner; SW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> sec. 34, T2S R43E, Herman quad., Bonneville Co., Idaho. Unnamed Cr.-Brockman Cr.-Greys Lk. Outlet-Willow Cr.-Snake R.-Columbia R., Caribou Range. Unnamed tributary to Brockman Creek, 7.0 mi. W. of Caribou Basin Guard Station on Brockman Creek Road, Caribou National Forest. Elev. 6600'. Depth 2-4". Small cold spring-fed creek; muddy substrate; no macrophytes or epiphytic algae. No mollusks; hand and dip net collections. Heavy sheep grazing. 8/27/1994 TF, EJ, JJ!

2067. Third unnamed tributary to Brockman Creek. Zone 12: 467,720E 4,782,400N. Center SE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> sec. 34, T2S R43E, Herman quad., Bonneville Co., Idaho. Unnamed Cr.-Brockman Cr.-Greys Lk. Outlet-Willow Cr.-Snake R.-Columbia R., Caribou Range. Unnamed tributary to Brockman Creek, 6.5 mi. W. on Brockman Creek Road from Caribou Basin Guard Station. Elev. 6640'. Depth 2-6". Muddy substrate; no macrophytes; common epiphytic algae; spring-fed small cold creek. No mollusks; hand and dip net collections attempted. Heavy sheep grazing. 8/27/1994 TF, EJ, JJ!

2068. McCoy Creek unnamed tributary 1. Zone 12: 482,520E 4,777,980N. NW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> sec. 17, T3S R45E, Poker Peak quad., Bonneville Co., Idaho. Unnamed Cr.-McCoy Cr.-Snake R.-Columbia R., Caribou Range. Small unnamed tributary to McCoy Creek, ca. 0.6 mi. W. of mouth of Box Canyon Creek, S. of McCoy Creek Road (FS ) ca. 0.1 mi., Caribou National Forest. Elev. 6060'. Depth 0-2". Small cold spring-fed creek run; common epiphytic algae, no macrophytes; cobble (limestone)-sand-mud substrate; open; dry; common *Rubrus*. No mollusks; hand and dip net collections. Somewhat eutropified; heavily grazed; logged. 8/27/1994 TF, EJ, JJ!

2069. McCoy Creek unnamed tributary 2. Zone 12: 483,400E 4,777,920N. SE<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> sec. 17, T3S R45E, Poker Peak quad., Bonneville Co., Idaho. Unnamed Cr.-McCoy Cr.-Snake R.-Columbia R., Caribou Range. Unnamed tributary to McCoy Creek (S. side) near mouth of Box Canyon Creek, S. of McCoy Creek Road, collected 0.1 mi. from road, Caribou National Forest. Elev. 6050'. Depth 0-4". Small cold spring-fed creek; mud, sand, and cobble (limestone) substrate; common epiphytic algae; no macrophytes; open. No mollusks; dip net and hand

collections attempted. Eutrophic; heavily grazed; now almost dry; lumbered. 8/27/1994 TF, EJ, JJ!

2070. Salt River at McCoy Creek Road bridge. [ ], Alpine quad., Bonneville Co., Idaho. Salt R.-Snake R.-Columbia R. Salt River, W. side at McCoy Creek Road (FS87), just upstream of Palisades Reservoir. Depth 2-18". Medium-sized very cold river; mud and boulder-cobble substrate. Abundant *Fluminicola*; uncommon *Physella*, *Stagnicola*; common sphaeriids. Hand and dip net collections. Fairly pristine river. 8/27/1994 TF, EJ, JJ!

2071. Tincup Creek at Tincup Creek Campground. Zone 12: 491,630E 4,761,060N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 7, T5S R46E, Etna quad., Caribou Co., Idaho. Tincup Cr.-Salt R.-Snake R.-Columbia R., Caribou Range, Star Valley. Tincup Creek in Tincup Creek Campground, 0.1 mi. S. of ID34, Caribou National Forest. Elev. 5840'. Depth 2-8". Large cold eutropified creek; abundant epiphytic algae, no macrophytes; mud, sand, gravel, common cobble substrate. Rare *Physella* (mostly eggs) and sphaeriids; dip net and hand collections not retained. Appears to be agriculture-impacted. 8/28/1994 TF, EJ, JJ!

2072. Tincup Creek at Pine Bar Campground. Zone 12: 482,860E 4,757,530N. NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 20, T5S R45E, Stump Peak quad., Caribou Co., Idaho. Tincup Cr.-Salt R.-Snake R.-Columbia R., Caribou Range. Tincup Creek at Pine Bar Creek Campground, ca. 10.2 mi. E. of Wayan on ID34, Caribou National Forest. Elev. 6250'. Depth 2-12". Large cold impounded by beaver dams; mud, sand, local gravel, and cobble riffles; abundant epiphytic algae; common *Chara* in pools. Common *Physella*; dip net and hand collections. Seems strongly nutrient-enriched. 8/28/1994 TF, EJ, JJ!

2073. Tincup Creek. Zone 12: 486,490E 4,758,560N. E $\frac{1}{2}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 15, T5S R45E, Stump Peak quad., Caribou Co., Idaho. Tincup Cr.-Salt R.-Snake R.-Columbia R., Caribou Range. Tincup Creek 8.5 mi. SW of Freedom (WY), W. of ID34, Caribou National Forest. Elev. 6060'. Depth 2-12". Large cold creek; abundant epiphytic algae; scattered *Chara*, *Rorippa*; predominantly cobble, gravel, sand substrate. Uncommon *Fluminicola*; common *Physella* and sphaeriids, rare *Radix*. Hand and dip net collections. Strongly eutropified; snails absent from algae-covered rocks. 8/28/1994 TF, EJ, JJ!

2074. Wilson Flat 1. Zone 12: 444,320E 4,763,000N. NE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 5, T5S R41E, Meadow Creek Mtn. quad., Caribou Co., Idaho. Wilson Cr.-Blackfoot R.-Snake R.-Columbia R. Large unnamed spring run on SE side of Wilson Flat just W. of Blackfoot North Access Road, below Wilson Ridge, NE end of Blackfoot Reservoir (Blackfoot River). Elev. 6130'. Depth 2-10". Large, somewhat warm spring run in formation spring complex; mostly calcareous silt, sand, and gravel; abundant *Chara*; common *Rorippa*; open, some grasses. Locality 2075 is at source of this spring run. Large *Pyrgulopsis* very common; rare *Physella*, sphaeriids. Dip net and hand collections. Moderately grazed. 8/28/1994 TF, EJ, JJ!

2075. Wilson Flat 2. Zone 12: 444,420E 4,763,720N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 32, T4S R41E, Meadow Creek Mtn. quad., Bingham Co., Idaho. Wilson Cr.-Blackfoot R.-Snake R.-Columbia R. Unnamed spring at source to the E. of Wilson Creek and 0.4 mi. N. of Blackfoot North Access Road, Wilson Flat, NE end of Blackfoot Reservoir (Blackfoot River). Elev. 6160'. Depth 2-8". Medium-sized very cold formation spring at source; spring pool with abundant *Rorippa*, common *Veronica* and *Chara*; travertine bedrock, silt, sand, and gravel. Locality 2074 is in run of this spring downstream on W. side of Blackfoot North Access Road. Very common *Pyrgulopsis*, *Stagnicola*; uncommon *Physella*, sphaeriids; very rare *Valvata*. Hand, dip net and tray collections. 8/28/1994 TF, EJ, JJ!

2076. Wilson Flat 3. Zone 12: 443,890E 4,763,320N. SE<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> sec. 31, T4S R41E, Meadow Creek Mtn. quad., Bingham Co., Idaho. Wilson Cr.-Blackfoot R.-Snake R.-Columbia R. Unnamed small spring just S. of Blackfoot North Access Road, center of Wilson Flat, 1.6 mi. E. of Poison Creek boat ramp, NE end of Blackfoot Reservoir (Blackfoot River). Elev. 6140'. Depth 2-8". Small formation spring at source; abundant epiphytic algae, common *Rorippa*; calcareous mud, salt, and gravel. Common small *Pyrgulopsis*; dip net and tray collections. 8/28/1994 TF, EJ, JJ!

2077. Wilson Flat 4. Zone 12: 443,990E 4,763,440N. SE<sub>1/4</sub> NE<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> sec. 31, T4S R41E, Meadow Creek Mtn. quad., Bingham Co., Idaho. Wilson Cr.-Blackfoot R.-Snake R.-Columbia R. Unnamed small isolated spring 0.1 mi. NE of Blackfoot North Access Road, 1.7 mi. E. of Poison Creek boat ramp, Wilson Flat, NE end of Blackfoot Reservoir (Blackfoot River). Elev. 6150'. Depth 0-4". Small formation spring at source; cold, clear, rather slow; travertine bedrock, gravel, sand, mud; common *Rorippa*. Common *Pyrgulopsis* in protected areas. Dip net and tray collections. Heavily grazed. 8/28/1994 TF, EJ, JJ!

2078. Wilson Flat 6. Zone 12: 443,350E 4,763,280N. SE<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> sec. 31, T4S R41E, Meadow Creek Mtn. quad., Bingham Co., Idaho. Wilson Cr.-Blackfoot R.-Snake R.-Columbia R. Unnamed spring collected at source, ca. 0.15 mi. S. of Blackfoot North Access Road and 0.73 mi. E. of Poison Creek boat ramp, Wilson Flat, NE end of Blackfoot Reservoir (Blackfoot River). Elev. 6140'. Depth 2-10". Medium-sized formation spring; cold, swift, slightly turbid; travertine bedrock, mud, sand, and gravel; very common *Cladophora*; *Rorippa* common at margins. Locality 2079 to the E. and drains into run of this spring. Common small *Pyrgulopsis*; uncommon *Physella*. Dip net and tray collections. Moderately grazed; eutrophic. 8/28/1994 TF, EJ, JJ!

2079. Wilson Flat 7. Zone 12: 443,390E 4,763,220N. NW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 31, T4S R41E, Meadow Creek Mtn. quad., Bingham Co., Idaho. Wilson Cr.-Blackfoot R.-Snake R.-Columbia R. Unnamed formation spring collected at source, ca. 0.2 mi. S. of Blackfoot North Access Road and 0.8 mi. E. of Poison Creek boat ramp, Wilson Flat, NE end of Blackfoot Reservoir (Blackfoot River). Elev. 6135'. Depth 2-4". Small-sized cold formation spring; travertine bedrock, mud, silt, and gravel; abundant *Rorippa*, common *Mimulus*. Spring not on USGS map. This locality drains into spring run of locality 2078. Common small *Pyrgulopsis* and *Physella*; dip net and tray collections. Heavily grazed. 8/28/1994 TF, EJ!

2080. Wilson Flat 8. Zone 12: 443,580E 4,763,260N. SE<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> sec. 31, T4S R41E, Meadow Creek Mtn. quad., Bingham Co., Idaho. Wilson Cr.-Blackfoot R.-Snake R.-Columbia R. Unnamed medium-sized formation spring at source, ca. 0.1 mi. S. of Blackfoot North Access Road and 0.9 mi. E. of Poison Creek boat ramp, Wilson Flat, NE end of Blackfoot Reservoir (Blackfoot River). Elev. 6150'. Depth 2-12". Medium-sized cold formation spring pool; *Rorippa*-covered; common *Mimulus*; travertine bedrock, mud, sand, gravel, and occasional cobbles. Common *Pyrgulopsis* and *Physella*; dip net and tray collections. Moderately-heavily grazed. 8/28/1994 TF, EJ, JJ!

2081. The Dip 3. Zone 12: 438,730E 4,739,110N. NW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> sec. 23, T7S R40E, The Dip quad., Caribou Co., Idaho. Ten Mile Cr.-Soda Cr. (Canal)-Bear R.-Great Salt Lk., Chesterfield Range. Small unnamed spring on E.-facing slope in S. end of The Dip, ca. 0.8 mi. W. of Indian Creek Road. Elev. 6420'. Depth 0-2". Almost dry small cold spring; mud and scattered quartzite cobble substrate; no macrophytes or algae; open; grasses, sedges, scattered *Pinus ponderosa*. No mollusks. Almost dry; heavily grazed; partly piped. 8/29/1994 TF, EJ, JJ!

2082. Enoch Valley unnamed spring 1. Zone 12: 463,230E 4,746,000N. SW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> SW<sub>1/4</sub> sec. 29, T6S R43E, Lower Valley quad., Caribou Co., Idaho. Unnamed Cr.-Little Blackfoot

R.-Blackfoot R.-Snake R.-Columbia R., Wooley Range. Lower (SW) surviving source spring at head of Enoch Valley, directly alongside (E. of) Long Valley Road. Elev. 6420'. Cold spring on road berm (just below rd.); grass-covered, approximately 16" x 16"; no macrophytes or algae; mud, sand, and fine gravel substrate. Spring not on USGS map. Rare *Lyogyrus* at source of spring only; dip net collections. Heavily impacted by road building; snails in small intact remnant protected from cattle between fence and road, rest of spring run trashed by cattle. 8/29/1994 TF, EJ, JJ!

2083. Enoch Valley unnamed spring 2. Zone 12: 463,150E 4,745,980N. NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 29, T6S R43E, Lower Valley quad., Caribou Co., Idaho. Unnamed cr.-Little Blackfoot R.-Blackfoot R.-Snake R.-Columbia R., Wooley Range. Upper (NW) source spring at head of Enoch Valley just SE of Enoch Valley Road. Elev. 6440'. Depth 0-2". Cold spring with mud substrate; common *Lemna*, rare epiphytic algae; turbid; very slow flow. No mollusks; dip net collection attempted. Very heavily grazed. 8/29/1994 TF, EJ, JJ!

2084. Enoch Valley unnamed spring 3. Zone 12: 463,200E 4,745,940N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 29, T6S R43E, Lower Valley quad., Caribou Co., Idaho. Unnamed Cr.-Little Blackfoot R.-Blackfoot R.-Snake R.-Columbia R., Wooley Range. SE source spring in Enoch Valley, ca. 0.1 mi. SE of Enoch Valley Road. Elev. 6440'. Depth 2-4". Cold spring with mud substrate; scattered *Rorippa*. Cold; slightly turbid; slow. No mollusks. Very heavily grazed. 8/29/1994 TF, EJ, JJ!

2085. Enoch Valley unnamed spring 4. Zone 12: 463,430E 4,746,220N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 29, T6S R43E, Lower Valley quad., Caribou Co., Idaho. Unnamed Cr.-Little Blackfoot R.-Blackfoot R.-Snake R.-Columbia R., Wooley Range. Combined SW spring run to E. of Enoch Valley Road, near mouth of unnamed canyon. Elev. 6380'. Depth 2-6". Cold spring with mud, sand, and gravel substrate; common *Rorippa* and epiphytic algae; open. Cold; slightly turbid; rather slow. Uncommon *Lyogyrus*; hand and dip net collections. Moderately grazed. 8/29/1994 TF, EJ, JJ!

2086. Unnamed spring at head of Lower Valley. Zone 12: 485,900E 4,743,260N. Projected from SW corner; SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 1, T7S R42E, China Hat quad., Caribou Co., Idaho. Unnamed Cr.-Little Blackfoot R.-Blackfoot R.-Snake R.-Columbia R., Long Valley. Unnamed spring on W. side of Long Valley Road at the head of Lower Valley (S. end), ca. 1.2 mi. N. of Blackfoot River Road junction. Elev. 6250'. Depth 2-4". Impounded spring with mud substrate; basalt bedrock; no macrophytes or algae. No mollusks; dip net collections attempted. Heavily grazed. 8/29/1994 TF, EJ, JJ!

2087. Blackfoot River at Blackfoot Park. Zone 12: 454,800E 4,740,840N. SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 16, T7S R42E, China Hat quad., Caribou Co., Idaho. Blackfoot R.-Snake R.-Columbia R. Blackfoot River collected N. of Blackfoot Bridge, on W. side of Blackfoot River Park. Small river with mud, sand, gravel, and cobble substrate; scattered *Potamogeton filiformis* stands. Numerous dead *Fluminicola*; none live; rare live *Margaritifera falcata*, *Ferrissia*. Cold; clear; slow-moderate velocity. Dip net and hand collections. 8/29/1994 TF, EJ, JJ!

2088. Wilson Flat 5. Zone 12: 443,640E 4,763,670N. Center NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 31, T4S R41E, Meadow Creek Mtn. quad., Bingham Co., Idaho. Wilson Cr.-Blackfoot R.-Snake R.-Columbia R. Unnamed spring creek channel in approximate center of Wilson Flat, NE corner of Blackfoot Reservoir, ca. 0. mi. NE of Blackfoot North Access Road. Elev. 6160'. Depth 2-14". Large spring-fed creek; travertine mud, sand, gravel, scattered cobbles; abundant *Chara*; common *Rorippa* at sides; *Veronica* and bryophytes locally. Common *Stagnicola*; abundant *Physella*. Dip net and hand collections. May be diversion from original Wilson Creek; heavily grazed. 8/28/1994 TF, EJ, JJ!

2089. Wilson Flat 9. Zone 12: 44,580E 4,763,770N. NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 32, T4S R41E, Meadow Creek Mtn. quad., Bingham Co., Idaho. Wilson Cr.-Blackfoot R.-Snake R.-Columbia R. Unnamed E. head spring of large spring-fed run E. of Wilson Creek; E. side of Wilson Flat, ca. 0.5 mi. NE of Blackfoot North Access Road at base of Wilson Ridge, NE side of Blackfoot Reservoir (Blackfoot River). Elev. 6160'. Depth 0-2'. Rather large former cold formation spring pool and outlet; travertine bedrock, sand, gravel; mostly grasses and sedge in channel currently. Marked as spring on USGS map; almost dry. No mollusks. 8/28/1994 TF, EJ, JJ!

2090. Wilson Flat 10. Zone 12: 442,860E 4,763,550N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 31, T4S R41E, Meadow Creek Mtn. quad., Bingham Co., Idaho. Wilson Cr.-Blackfoot R.-Snake R.-Columbia R. Large unnamed spring and run below (W. of) Blackfoot North Access Road and above reservoir high water mark, NE side of Blackfoot Reservoir (Blackfoot River). Elev. 6125'. Depth 2-10". Large cold formation spring pool and run; travertine bedrock, sand, gravel, cobble; mud; common *Rorippa*. *Physella* only; not collected. Very heavily grazed. 8/29/1994 TF, EJ, JJ!

2091. Poison Creek. Zone 12: 442,110E 4,763,760N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 36, T4S R40E, Meadow Creek Mtn. quad., Bingham Co., Idaho. Poison Cr.-Blackfoot R.-Snake R.-Columbia R. Poison Creek, just above reservoir access road, ca. 0.15 mi. NW of Poison Creek Boat Ramp, Blackfoot Reservoir (Blackfoot River), NW side. Elev. 6140'. Depth 0-4". Small spring-fed creek; common basalt cobbles; some mud, sand; minor travertine; rare *Rorippa*. May be alkaline. Common *Physella* dip net and hand collections. Area heavily grazed. 8/29/1994 TF, EJ, JJ!

2092. Unnamed spring west of Poison Creek. Zone 12: 441,090E 4,763,270N. Center SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 36, T4S R40E, Meadow Creek Mtn. quad., Bingham Co., Idaho. Blackfoot R.-Snake R.-Columbia R. Unnamed formation spring just S. of access road, NW corner of Blackfoot Reservoir (Blackfoot River), ca. 0.7 mi. W. of Poison Creek. Elev. 6195'. Depth 2-12". Formation spring; warm, abundant algae, less common *Rorippa*, *Cicuta*; travertine bedrock and mud substrate. Abundant dead mollusks; live only *Physella*, *Gyraulus*, rare sphaeriids. Dip net collections. Heavily grazed. 8/29/1994 TF, EJ, JJ!

2093. Unnamed spring on Chicken Creek. Zone 12: 441,790E 4,756,750N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 24, T4S R40E, Reservoir Mtn. quad., Caribou Co., Idaho. Chicken Cr.-Corral Cr.-Grizzly Cr.-Blackfoot R.-Snake R.-Columbia R. Unnamed head spring of Chicken Creek, ca. 0.3 mi. NE. of W. access road, SW of the Blackfoot Reservoir (Blackfoot River). Elev. 6115'. Depth 2-12". Mostly mud substrate with rare basalt gravel and cobbles; mostly grasses and sedges with local *Rorippa*. Common *Physella* and sphaeriids; not collected. Moderately grazed; dug out. Dip net collection. 8/29/1994 TF, EJ, JJ!

2094. Wallenstine Spring. Zone 12: 471,120E 4,727,160N. NE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 30, T8S R44E, Dry Valley quad., Caribou Co., Idaho. Slug Cr.-Blackfoot R.-Snake R.-Columbia R., Schmid Ridge. Wallenstine Spring to SW of Slug Creek Road at Wallenstine Ranch, on W. edge of Schmid Ridge. Elev. 6360'. Depth 2-8". Large cold spring with abundant *Rorippa*, *Mimulus*; common epiphytic algae; sand, gravel, and cobble (basalt) substrate. Spring unnamed on USGS map; USGS says Knudsen Ranch; current Forest Service map says Wallenstine Ranch; sign at ranch says Slug Creek Ranch. Uncommon small *Lyogyrus*; common *Physella*. Very cold; clear; moderate flow. Moderately grazed. Dip net and tray, brush collections. 8/30/1994 TF, EJ, JJ!

2095. Slug Creek-Patterson Ranch 1. Zone 12: 47,200E 4,724,560N. NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 5, T9S R44E, Dry Valley quad., Caribou Co., Idaho. Slug Cr.-Blackfoot R.-Snake R.-Columbia R., Schmid Ridge. Unnamed spring S. of Slug Creek Road, ca. 0.4 mi. W. of mouth of Goodheart Creek. Elev. 6395'. Depth 0-4". Almost dry cold spring with mud substrate; no macrophytes or

epiphytic algae; open, grassy. No mollusks; dip net collections attempted. Grazed; horse pasture. 8/30/1994 TF, EJ, JJ!

2096. Slug Creek-Patterson Ranch 2. Zone 12: 472,710E 4,724,220N. NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 5, T9S R44E, Dry Valley quad., Caribou Co., Idaho. Slug Cr.-Blackfoot R.-Snake R.-Columbia R., Schmid Ridge. Unnamed spring W. of Slug Creek Road, ca. 0.2 mi. SW of mouth of Goodheart Creek. Elev. 6405'. Depth 0-2". Almost dry cold spring with mud substrate; no macrophytes or epiphytic algae; *Salix* at edges. No mollusks; dip net collections attempted. Heavily grazed. 8/30/1994 TF, EJ, JJ!

2097. Junction Spring. Zone 12: 465,760E 4,726,820N. Center NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 27, T8S R43E, Johnson Creek quad., Caribou Co., Idaho. Johnson Cr.-Slug Cr.-Blackfoot R.-Snake R.-Columbia R., Aspen Range. Junction Spring SE of Wood Canyon Road 0.1 mi. SW of Mill Fork Road. Depth 0-2". Small cold spring with mostly mud substrate with scattered cobbles; mostly grass borders; no macrophytes or epiphytic algae. No mollusks; dip net collections attempted. Dug out, heavily grazed. 8/30/1994 TF, EJ, JJ!

2098. Unnamed spring west of Junction Spring. Zone 12: 464,340E 4,727,420N. SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 28, T8S R43E, Johnson Creek quad., Caribou Co., Idaho. Trail Cr.-Slug Cr.-Blackfoot R.-Snake R.-Columbia R., Aspen Range. Unnamed source spring to Trail Creek 0.5 mi. SE of locality 2101. Elev. 6410'. Depth 6-18". Ponded cold spring; mostly mud substrate with scattered shale cobble substrate; common *Chara* and *Lemna*. Uncommon *Physella*; common sphaeriids; not collected. Dug out; grazed; strong stench of cow manure. 8/30/1994 TF, EJ, JJ!

2099. Trail Creek source springs-west. Zone 12: 463,480E 4,727,950N. Center SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 28, T8S R43E, Johnson Creek quad., Caribou Co., Idaho. Trail Cr.-Slug Cr.-Blackfoot R.-Snake R.-Columbia R., Aspen Range. W.-most of 3 source springs to Trail Creek 0.2 mi. S. of Mill Fork Road and E. 2.3 mi. from Trail Creek Road junction. Elev. 6460'. Depth 2-6". Small very cold spring run; *Rorippa*-covered; mud, sand, and limestone cobble substrate; mostly grass and shrubs along edges. Common *Lyogyrus*; rare *Physella*; dip net collections. Somewhat modified, grazed. 8/30/1994 TF, EJ, JJ!

2100. Trail Creek source springs-middle. Zone 12: 463,500E 4,727,900N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 28, T8S R43E, Johnson Creek quad., Caribou Co., Idaho. Trail Cr.-Slug Cr.-Blackfoot R.-Snake R.-Columbia R., Aspen Range. Middle and largest of 3 source springs to Trail Creek 0.2 mi. S. of Mill Fork Road and E. 2.3 mi. from Trail Creek Road junction. Elev. 6460'. Depth 2-8". Medium-sized very cold spring run; *Rorippa*, *Mimulus*, and *Cicuta* covered; mud, sand, and cobble (limestone) substrate; mostly open. Common *Lyogyrus*; uncommon *Physella*; hand and dip net collections. Some modification, grazing. 8/30/1994 TF, EJ, JJ!

2101. Trail Creek source springs-east. Zone 12: 463,540E 4,727,900N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 28, T8S R43E, Johnson Creek quad., Caribou Co., Idaho. Trail Cr.-Slug Cr.-Blackfoot R.-Snake R.-Columbia R., Aspen Range. Middle and largest of 3 source springs to Trail Creek 0.2 mi. S. of Mill Fork Road and E. 2.3 mi. from Trail Creek Road junction. Elev. 6460'. Depth 0-4". Medium-sized very cold spring run; *Rorippa*, *Mimulus*, and *Cicuta*-covered; mud, sand, and cobble (limestone) substrate; mostly open (grasses and scattered sage). Common *Lyogyrus*; uncommon *Physella*. Dip net and tray collection. Somewhat modified; some grazing. 8/30/1994 TF, EJ, JJ!

2102. Channel west of TNC Formation Springs Preserve. Zone 12: 454,620E 4,726,800N. SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 28, T8S R42E, Soda Springs quad., Caribou Co., Idaho. Soda Cr.-Bear R.-Great Salt Lk., Soda Creek. Linear E.-W. channel, flowing E., just SW of TNC Formation

Springs Preserve property boundary on BLM land, collected at new wooden bridge. Elev. 6130'. Depth 2-6". Travertine bedrock and gravel, with mud patches; local extensive *Cicuta* and *Rorippa* patches. Formation spring terrain. Large spring-fed channel, cold, clear, rather swift current. Mostly artificial channel in formation spring complex; on USGS map. Abundant *Pyrgulopsis*; rare *Physella*. Dip net and tray collection. 8/30/1994 TF, EJ, JJ!

2103. Channel at headgate west of TNC Formation Springs Preserve. Zone 12: 454,630E 4,726,860N. NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 28, T8S R42E, Soda Springs quad., Caribou Co., Idaho. Soda Cr.-Bear R.-Great Salt Lk., Soda Creek. Headgate and associated channels W. of TNC Formation Springs Preserve on BLM land, mostly from N-S channel from Formation Springs. Elev. 6130'. Depth 2-8". Travertine bedrock and gravel, some mud patches; common *Cicuta* and *Rorippa* patches. Formation spring terrain. Large spring-fed channel, cold, clear, moderate-swift current. Partly artificial channel in formation spring complex; N-S channel on USGS map. Abundant *Pyrgulopsis*, rare *Physella*. Dip net and tray collection. 8/30/1994 TF, EJ, JJ!

2104. Bear River north of Grace Power Plant. Zone 12: 434,400E 4,710,180N. SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 20, T10S R40E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gem Valley. E. side of Bear River immediately S. of footbridge 0.5 mi., N. of Grace Power Plant. Elev. 5075'. Depth 2-18". River with cemented, stepped, and potholed calcareous substrate with some mud, gravel, and cobble patches; abundant epiphytic algae, including chartreuse encrusting form; common *Potamogeton filiformis*, *Rorippa* patches at edges of channel; spring-influenced. Medium-sized river. Somewhat cold, slightly turbid, moderate velocity. Mostly artificial channel in formation spring complex; on USGS map. Somewhat alkaline and eutropified; large-scale withdrawals to N.; springs in this stretch; impounded to S. Common large *Pyrgulopsis*, *Fluminicola*, sphaeriids; abundant *Physella*, and *Stagnicola*. Dip net and tray collection. 8/31/1994 TF, EJ, JJ!

2105. South source spring north of Grace Power Plant. Zone 12: 434,290E 4,710,540N. Center SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 20, T10S R40E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gem Valley. Unnamed spring 0.2 mi. N. of footbridge, on W. side of Bear River, ca. 0.75 mi. N. of Grace Power Plant. Elev. 5100'. Depth 0-6'. Medium-sized cold spring with mud-covered travertine substrate; abundant *Urtica*, *Rorippa*; rare *Mimulus*. Rare *Lygogyrus*, collected near source; dip net and hand collections. Cold; slightly turbid; slow-moderate velocity. Burned over, badly grazed; dead hydrobiids abundant. 8/31/1994 TF, EJ, JJ!

2106. North source spring north of Grace Power Plant. Zone 12: 434,320E 4,710,560N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 20, T10S R40E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gem Valley. Unnamed spring 0.3 mi. N. of footbridge, and 0.1 mi. N. of locality 2105, W. side of Bear River, ca. 0.85 mi. N. of Grace Power Plant. Elev. 5100'. Depth 0-8". Medium-sized very cold spring with mud over travertine substrate; clear, swift current; abundant *Urtica*, thistle, *Rorippa*. No mollusks; dip net collections attempted. Burned over, heavily grazing impact. 8/31/1994 TF, EJ, JJ!

2107. Unnamed spring north of Grace Power Plant. Zone 12: 434,290E 4,710,260N. NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 20, T10S R40E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gem Valley. Unnamed spring on hillside 0.1 mi. NW of footbridge, 0.5 mi. N. of Grace Power Plant, W. side of Bear River. Elev. 5120-5140'. Depth 0-2". Grasses, sedges; mud substrate; spring run almost dry. Somewhat cold; clear; very slow. No mollusks. Dip net and hand collections attempted. 8/31/1994 TF, EJ, JJ!

2108. Unnamed spring northeast of Cove Power Plant. Zone 12: 434,960E 4,707,200N. Center NE $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 33, T10S R43E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gentile Valley. Unnamed spring to E. of Cove Power Plant access road, 0.15 mi. NE

of Cove Power Plant, E. side of Bear River. Elev. 5020'. Capped cold spring. No mollusks. 8/31/1994 TF, EJ, JJ!

2109. First unnamed spring north of Cove Power Plant. Zone 12: 434,900E 4,707,460N. SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 28, T10S R43E , Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gentile Valley. Unnamed spring to E. of Cove Power Plant access road, 0.15 mi. NE of Cove Power Plant, E. side of Bear River. Elev. 5025'. Capped cold spring. No mollusks. 8/31/1994 TF, EJ, JJ!

2110. Second unnamed spring north of Cove Power Plant. Zone 12: 434,820E 4,707,755N. NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 28, T10S R43E , Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gentile Valley. Unnamed spring to E. of Cove Power Plant access road, 0.45 mi. N. of Cove Power Plant, E. side of Bear River. Elev. 5050'. Depth 0-1". Almost dry; travertine mud and gravel substrate; no macrophytes or algae. Not on USGS map. No mollusks. Largely piped. Dip net collection attempted. 8/31/1994 TF, EJ, JJ!

2111. Third unnamed spring north of Cove Power Plant. Zone 12: 434,720E 4,707,940N. NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 28, T10S R43E , Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gentile Valley. Unnamed spring W. of flume, on E. side of Bear River, ca. 0.6 mi. N. of Cove Power Plant. Elev. 4990'. Depth 0-14". Medium-sized very cold spring with travertine and basalt, cobbles; *Rorippa*-covered. Not on USGS map. Very common *Pyrgulopsis*; common *Physella*; dip net and hand collections. Essentially pastured. 8/31/1994 TF, EJ, JJ!

2112. Unnamed spring run north of Grace Power Plant. Zone 12: 434,310E 4,710,350N. NE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 20, T10S R43E , Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gem Valley. Unnamed spring run on W. side of Bear River, ca. 0.15 mi. N. of footbridge, about 0.7 mi. NW of Grace Power Plant. Elev. 5095'. Depth 0-12". Spring with mostly mud and rare cobble over travertine; open, grassy; *Rorippa* at edges. Not on USGS map. Rare large *Pyrgulopsis*, common *Physella*; dip net and tray collection. 8/31/1994 TF, EJ, JJ!

2113. Confluence of spring with Bear River, north of Cove Power Plant. Zone 12: 434,650E 4,708,020N. Center NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 28, T10S R43E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gentile Valley. Unnamed combined spring runs along E. side of Bear River, ca. 0.7 mi. N. of Cove Power Plant. Elev. 4950'. Depth 0-6". Mixed travertine and basalt sand, gravel, mud substrate; abundant *Rorippa*, local *Myriophyllum* and bryophytes, *Scirpus*. Not shown on USGS map. Very common *Pyrgulopsis*; common *Physella*. Dip net and tray collections. Mollusks live in spring influenced area along E. bank of river. River polluted (mollusks dead); spring relatively intact. 8/31/1994 TF, EJ, JJ!

2114. Spring 0.25 mi. north of Grace Power Plant. Zone 12: 434,650E 4,709,860N. NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 21, T10S R43E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gem Valley. Unnamed spring near 0.25 mi. N. of Grace Power Plant, E. side of Bear River just below road to footbridge. Elev. 5040'. Depth 0-6". Medium-sized cold spring run; mostly open, grassy; local *Rorippa*. Common *Fossaria*, *Physella*; dip net collections. 8/31/1994 TF, EJ, JJ!

2115. Unnamed spring 0.75 miles north of Grace Power Plant. Zone 12: 434,320E 4,710,680N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 17, T10S R43E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk., Gem Valley. Unnamed spring near 0.75 mi. N. of Grace Power Plant, W. side of Bear River. Elev. 5120'. Depth 0-2". Cold spring with mud substrate; no macrophytes or epiphytic algae; sedges, grasses. Rare *Physella* and sphaeriids; not collected. Badly grazed; almost dry. 8/31/1994 TF, EJ, JJ!

2116. The Dip 1. Zone 12: 438,760E 4,739,460N. SW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 23, T7S R40E, The Dip quad., Caribou Co., Idaho. Ten Mile Cr.-Soda Cr. (Canal)-Bear R.-Great Salt Lk., Chesterfield Range. Unnamed small spring (N. most) in The Dip, ca. 0.1 mi. W. of Indian Creek Road. Elev. 6380'. Depth 2-6". Stone wall around cold spring source; mud, gravel, and limestone cobble substrate; scattered *Rorippa* and *Mimulus*. Rare *Lyogyrus*; dip net and hand collections. Cold; slightly turbid; slow. Heavily grazed. 8/29/1994 TF, EJ, JJ!

2117. The Dip 2. Zone 12: 438,890E 473,932N. SE<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> sec. 23, T7S R40E, The Dip quad., Caribou Co., Idaho. Ten Mile Cr.-Soda Cr. (Canal)-Bear R.-Great Salt Lk., Chesterfield Range. Unnamed small spring in the center of The Dip, ca. 0.5 mi. W. of Indian Creek Road. Elev. 6360'. Depth 2-6". Formerly with concrete wall at head of cold spring; mud and cobble (limestone) substrate; scattered *Rorippa* and *Mimulus*. Very rare *Lyogyrus*; hand collections. Cold; clear-slightly turbid; slow. Heavy grazing. 8/29/1994 TF, EJ, JJ!

2118. Four Corners (Willow Creek head spring). Zone 12: 441,710E 4,771,620N. Center SW<sub>1/4</sub> NW<sub>1/4</sub> SE<sub>1/4</sub> sec. 1, T4S R41E, Meadow Creek Mountain. quad., Bingham Co., Idaho. Willow Cr.-Henrys Fk.-Snake R.-Columbia R., Blackfoot Mountains. Unnamed head spring of Willow Creek, 0.2 mi. SE of Four Corners and 0.2 mi. S. of Crane Flat Road. Elev. 6510'. Depth 0-4". Formerly cold spring; mud and cobble (quartzite) substrate; no macrophytes or algae. No mollusks; dip net collection attempted. Modified and troughed several times; very heavily grazed. 8/29/1994 TF, EJ, JJ!

2119. Geyser Cone spring, Blackfoot River. Zone 12: 439,555E 4,759,180N. Center SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> sec. 14, T5S R40E, Reservoir Mountain. quad., Caribou Co., Idaho. Blackfoot R.-Snake R.-Columbia R. Geyser cones on S. side of Blackfoot River, at approximately RM 66.9, 0.1 mi. N. of Corral Creek Road. Elev. 6000-6040'. Depth 0-2". Extensive travertine accumulation; 2 cones, one dead; hot spring algae in W. cone, iron staining; no macrophytes. No mollusks; dip net collection attempted. 8/29/1994 TF, EJ, JJ!

2120. Bear River near Cove Power Plant. Zone 12: 434,650E 4,708,000N. SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> SE<sub>1/4</sub> sec. 28, T10S R43E, Grace Power Plant quad., Caribou Co., Idaho. Bear R.-Great Salt Lk. Bear River W. of flume and ca. 0.7 mi. NW of Cove Power Plant. Elev. 4940'. Depth 6-16". River with abundant epiphytic algae, *Potamogeton filiformis*; mud, sand, gravel, cobbles. No live mollusks; sphaeriids, *Pyrgulopsis*, *Fluminicola*, *Physella* dead only. Somewhat cold; turbid; moderate velocity. Nutrient-enriched. 8/31/1994 TF, EJ, JJ!

2121. Big Spring. Zone 12: 410,000E 4,735,400N. NW<sub>1/4</sub> SW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> sec. 35, T7S R37E, Bear Camp Gulch quad., Caribou Co., Idaho. Pebble Cr.-Portneuf R.-Snake R.-Columbia R., Portneuf Range. Big Spring, ca. 0.3 mi. NW of Big Spring Campground, next gully S. of mouth of Big Canyon, Caribou National Forest. Elev. 6360'. Depth 0-36". Large cold spring with mostly mud, scattered limestone and quartzite cobbles; abundant bryophytes. Common *Lyogyrus*; dip net and tray collections. Water source for campground; modified. Very cold; clear; slow flow. 9/1/1994 TF, EJ, JJ!

2122. Pebble Creek unnamed spring 1. Zone 12: 413,210E 4,732,070N. SW<sub>1/4</sub> NW<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> sec. 7, T8S R38E, Haystack Mtn. quad., Caribou Co., Idaho. Pebble Cr.-Portneuf R.-Snake R.-Columbia R., Portneuf Range. Unnamed spring on NE side of Pebble Creek, below Pebble Creek Road (FS36), ca. 0.1 mi. NW of mouth of Clear Creek, Caribou National Forest. Elev. 5920'. Depth 0-6". *Rorippa*-covered small cold spring run paralleling Pebble Creek; mud and quartzite cobble/gravel substrate. Not on USGS map. Somewhat cold; slightly turbid; slow. Rare *Lyogyrus* and *Physella*; dip net and tray collections. Badly grazed. 9/1/1994 TF, EJ, JJ!

2123. Pebble Creek unnamed spring 2. Zone 12: 413,280E 4,731,830N. Center S $\frac{1}{2}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 7, T8S R38E, Haystack Mtn. quad., Caribou Co., Idaho. Pebble Cr.-Portneuf R.-Snake R.-Columbia R., Portneuf Range. Unnamed spring on W. side of Pebble Creek, below Pebble Creek Road (FS36), ca. 0.1 mi. S. of mouth of Clear Creek, Caribou National Forest. Elev. 5920'. Depth 0-4". Small cold spring and seeps; common *Rorippa*; mud, gravel and cobble (quartzite) substrate. Not on USGS map. Very rare *Lyogyrus*; dip net collections. Very badly impacted by grazing. 9/1/1994 TF, EJ, JJ!

2124. Pebble Creek unnamed spring 3. Zone 12: 415,500E 4,731,410N. SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 8, T8S R38E, Haystack Mountain. quad., Caribou Co., Idaho. Pebble Cr.-Portneuf R.-Snake R.-Columbia R., Portneuf Range. Unnamed spring run on N. side of Pebble Creek Road (FS36), ca. 1.4 mi. SW of forest service gate (boundary), Caribou National Forest. Elev. 5560'. Depth 0-6". Small cold spring with mud, sand, quartzite gravel and cobble substrate; common small *Rorippa* patches. Cold; slightly turbid; slow. Not on USGS map. Rare *Lyogyrus*, uncommon *Physella*; dip net collections. Heavily grazed. 9/1/1994 TF, EJ, JJ!

2125. Hibner Springs. Zone 12: 423,760E 4,748,140N. SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 19, T6S R39E, Chesterfield Res. quad., Caribou Co., Idaho. Portneuf R.-Snake R.-Columbia R., Chesterfield Range. Hibner Springs run on N. side of Banks Road at a sharp curve, 2.5 mi. NW of Chesterfield and 0.5 mi. E. of Chesterfield Reservoir. Elev. 5450'. Depth 4-18". Combined run from two cold springs; *Rorippa* abundant in lower course; mostly mud substrate. Somewhat cold; slightly turbid; moderate velocity. *Physella* uncommon; collected by dip net, not retained. Channeled, grazed. 9/1/1994 TF, EJ, JJ!

2126. Twentyfour Mile Creek unnamed springs. Zone 12: 427,920E 4,749,140N. SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 15, T6S R39E, Chesterfield Res. quad., Caribou Co., Idaho. Twentyfour Mile Cr.-Portneuf R.-Snake R.-Columbia R., Chesterfield Range. Two unnamed springs above Twentyfour Mile Reservoir Road, ca. 1.3 mi. S. of Twentyfour Mile Reservoir. Elev. 5810-5840'. Dry; damp sedge and grass meadow. Nearly dry springs, no mollusks. Severe cattle damage. 9/1/1994 TF, EJ, JJ!

2127. Grim Springs 1. Zone 12: 422,690E 473,800N. Projected from NE corner; SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 30, T7S R39E, Chesterfield quad., Caribou Co., Idaho. Portneuf R.-Snake R.-Columbia R., Portneuf Valley. N.-most spring in Grim Springs, ca. 0.4 mi. N. of silos and W. of Nipper Road. Elev. 5310'. Depth 0-2". Nearly dry spring in open grassy meadow; mud substrate; no algae or macrophytes. No mollusks. Nearly dry. Very heavily grazed. 9/1/1994 TF, EJ, JJ!

2128. Grim Springs 2. Zone 12: 422,700E 4,737,930N. Projected from NE corner; SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 30, T7S R39E, Chesterfield quad., Caribou Co., Idaho. Portneuf R.-Snake R.-Columbia R., Portneuf Valley. Second spring from the N. in Grim Springs complex, ca. 0.35 mi. N. of silos and W. of Nipper Road. Elev. 5310'. Depth 0-2". Nearly dry spring in open grassy meadow; mud substrate; no algae or macrophytes. No mollusks. Nearly dry. Very heavily grazed. 9/1/1994 TF, EJ, JJ!

2129. Grim Springs 3. Zone 12: 422,615E 4,737,770N. Projected from NE corner; Center N $\frac{1}{2}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 30, T7S R39E, Chesterfield quad., Caribou Co., Idaho. Portneuf R.-Snake R.-Columbia R., Portneuf Valley. Third spring from the N. in Grim Springs complex, ca. 0.25 mi. N. of silos and W. of Nipper Road. Elev. 5310'. Depth 0-2". Nearly dry spring in open meadow with sedges and grasses; broad, muddy channel; no algae or macrophytes. No mollusks; dip net collections attempted. Very heavily grazed. 9/1/1994 TF, EJ, JJ!

2130. Portneuf River south of King Creek. Zone 12: 419,920E 4,737,430N. SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 26, T7S R38E, Chesterfield quad., Caribou Co., Idaho. Portneuf R.-Snake R.-Columbia R., Portneuf Valley. Portneuf River to E. of Toponce Creek Road bridge, ca. 3.5 mi. NE of site of Pebble. Elev. 5310'. Depth 0-2". Small river, nearly dry, split into shallow pools; mud, gravel, and cobble substrate (mixed lithologies). No live mollusks; dead *Physella* and *Sphaerium securis* only. Heavy groundwater withdrawal locally. 9/1/1994 TF, EJ, JJ!

2131. Rapid Creek unnamed spring. Zone 12: 400,770E 4,744,400N. Projected from SW corner; SE<sub>1/4</sub> SE<sub>1/4</sub> NW<sub>1/4</sub> NE<sub>1/4</sub> NW<sub>1/4</sub> sec. 2, T7S R36E, Bonneville Peak quad., Bannock Co., Idaho. Rapid Cr.-Portneuf R.-Snake R.-Columbia R., Portneuf Range. Unnamed spring run to E. of Rapid Creek Road, ca. 0.5 mi. N. of mouth of Sawmill Creek. Elev. 5040'. Depth 0-1". Almost dry spring; open and grassy; no macrophytes or algae; mud substrate. No mollusks; dip net collection attempted. 9/2/1994 TF, EJ, JJ!

2132. West Fork Rapid Creek unnamed spring 1. Zone 12: 393,320E 4,747,920N. NE<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> sec. 24, T6S R35E, Moonlight Mtn. quad., Bannock Co., Idaho. W. Fk. Rapid Cr.-Rapid Cr.-Portneuf R.-Snake R.-Columbia R., Pocatello Range. Unnamed spring on N. side of Buckskin Road, SW of Moonlight Mountain, ca. 9.4 mi. E. of Pocatello. Elev. 5620'. Depth 0-2". Cold spring with mud and basalt cobble substrate; no macrophytes or epiphytic algae; open and grassy; narrow run. No mollusks, dip net collections attempted. Cold; turbid; moderately fast flow. Heavily agriculture-impacted. 9/2/1994 TF, EJ, JJ!

2133. West Fork Rapid Creek unnamed spring 2. Zone 12: 392,330E 4,747,750N. N<sub>1/2</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> sec. 24, T6S R35E, Moonlight Mtn. quad., Bannock Co., Idaho. W. Fk. Rapid Cr.-Rapid Cr.-Portneuf R.-Snake R.-Columbia R., Pocatello Range. Unnamed spring run on N. side of Buckskin Road, SE of Camelback Mountain, ca. 8.8 mi. E. of Pocatello. Elev. 5610'. Depth 2-4". Cold spring with muddy substrate; open and grassy; common *Rorippa*. Not on USGS map. Uncommon *Physella* and sphaeriids; dip net collected but not retained. Somewhat cold; turbid; slow flow. Road and agriculture impacts. 9/2/1994 TF, EJ, JJ!

2134. Indian Springs 3. Zone 12: 346,830E 4,731,580N. SE<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> sec. 18, T8S R31E, Indian Springs quad., Power Co., Idaho. Warm Cr.-Cold Cr.-Snake R.-Columbia R., Deep Creek Mountains. Indian Springs S.-most spring run in S. (lower) spring set, Indian Springs Resort. Elev. 4420'. Depth 2-8". Warm spring; mud, gravel, and scattered cobble substrate; dense macrophyte beds (introduced); grassy and open. Very common *Pyrgulopsis*; rare *Tarebia*. Dip net and tray collections. Warm; clear; moderately fast flow. Spring modified for resort. 9/2/1994 TF, EJ, JJ!

2135. Indian Springs 4. Zone 12: 346,775E 4,731,600N. NW<sub>1/4</sub> SE<sub>1/4</sub> SW<sub>1/4</sub> NE<sub>1/4</sub> SE<sub>1/4</sub> sec. 18, T8S R31E, Indian Springs quad., Power Co., Idaho. Warm Cr.-Cold Cr.-Snake R.-Columbia R., Deep Creek Mountains. Indian Springs run from lower two springs (S. springs), below N. (larger) spring, Indian Springs Resort. Elev. 4420'. Depth 2-12". Warm spring; mud, gravel, and scattered cobble substrate; dense macrophyte beds (introduced taxon); grassy and open. Warm; clear; moderately fast flow. Major source (N. lower spring) capped. Very common *Pyrgulopsis*; rare *Tarebia*. 9/2/1994 TF, EJ, JJ!

2136. Cold Creek 4. Zone 12: 348,400E 4,728,760N. SW<sub>1/4</sub> SW<sub>1/4</sub> SW<sub>1/4</sub> SE<sub>1/4</sub> NE<sub>1/4</sub> sec. 29, T8S R31E, Indian Springs quad., Power Co., Idaho. Cold Cr.-Snake R.-Columbia R., Deep Creek Mountains. Large unnamed spring run 0.1 mi. from Cold Creek Road and 0.25 mi. from source spring, 2.4 mi. S. of Indian Springs. Elev. 4750'. Depth 2-14". Large cold spring run; mostly mud substrate; *Rorippa* at edges. Rare *Gyraulus*, sphaeriids; dip net collections, not retained. Cold; clear; rather fast flow. Spring somewhat agriculturally impacted. 9/2/1994 TF, EJ, JJ!

2137. West Fork Sunbeam Creek. Zone 12: 352,300E 4,731,220N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 14, T8S R31E, Indian Springs quad., Power Co., Idaho. W. Fk. Sunbeam Cr.-Sunbeam Cr.-Snake R.-Columbia R., Deep Creek Mountains. Large unnamed spring run, collected ca. 1.1 mi. below source, near junction with Sunbeam Road. Elev. 4880'. Depth 0-8". Large cold spring run; mud, gravel, and cobble substrate (mixed lithologies); sparse *Rorippa* at edges. Uncommon sphaeriids and *Physella*; dip net collected but not retained. Cold; clear; moderately fast. Spring agriculturally impacted. 9/2/1994 TF, EJ, JJ!

2138. Mammoth Spring. Zone 12: 449,000E 4,728,990N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 23, T8S R41E, Soda Springs quad., Caribou Co., Idaho. Soda Cr.-Bear R.-Great Salt Lk., Soda Creek Valley. Mammoth Spring at SW end of The Reservoir and 0.15 mi. NW of Soda Creek, R. Ayers Ranch. Elev. 5980'. Depth 2-16". Large very cold soda spring, travertine cobble, gravel, mud; common algae and protozoan slime on rocks. Very cold; clear; moderate-swift flow. No mollusks. 8/29/1994 TF, EJ!

2157. Southeastern slope of Mount Sampson. NE $\frac{1}{4}$  sec. 22, T23N R1W, Heavens Gate 1979 quad., Idaho Co. Loose rock of a knife-edge rock outcrop on the southeastern slope of Mount Sampson, Seven Devils Mountains, Nez Perce National Forest. Elev. ca. 5500'. Carinate form in broken limestone outcrop. *Pseudotsuga menziesii*, *Pinus ponderosa*, *Balsamorhiza*, *Physocarpus capitatus*, *Mertensia platyphylla*, glacier lily. *Oreohelix hammondi* type locality. Most found on east slope. Found with aestivation membrane, without and crawling mostly under rocks (not deep). 7/1982 William P. Hammer! [B6]

2158. Shingle Creek 1 (197). Center SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 1, T23N R1W, Heavens Gate 1979 quad., Idaho Co. N.-facing basalt outcrops and forest on S. side of Shingle Creek, ca. 0.2 mi. NW of mouth and 0.1 mi. from old DeVaney Place (now owned by State of Idaho). Elev. 2280'. Basalt cliff, rare talus, and forested outcrops; fairly well-shaded but disturbed forest with common deciduous understory plants. Collected along ca. 300' of road. Common small *Oreohelix* n. sp. 19, abundant *Cryptomastix mullani olneyae*; common *Allogona ptychophora ptychophora*. Hand collected. 5/31/1990 TF, EJ, SN! Abundant *Cryptomastix mullani olneyae*; common *Allogona ptychophora ptychophora* and *Oreohelix jugalis*. Hand collected. 10/3/1990 TF, GH! [B5]

2159. East-facing slope at mouth of Rapid River (198). SE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 32, T24N R1E, Pollock 1979 quad., Idaho Co. Steep S. and E.-facing slope above junction (NW) of Rapid River Road (FS2114) and US95 near mouth of Rapid River. Elev. 2000-2040'. Sandy, exposed slope with basalt outcrop, alluvium; mostly grasses, with scattered *Celtis*; mostly dry and open, but seepy in spring. Common local *Oreohelix* n. sp. 19; rare dead *Allogona ptychophora ptychophora* (not retained). Site has been grazed. Hand collected. 5/31/1990 TF, EJ, SN! [B24]

2160. Talus along US95 at road mile 193.2 (199). SE $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 28, T24N R1E, Riggins 1964 quad., Idaho Co. E.-facing talus on S. side of unnamed gulch N. of Alum Gulch, W. of US95 at road mile 193.2; opposite Little Salmon River at RM 3.0. Elev. 1920'. Basalt cobble-boulder talus with *Rhus diversiloba*, *Sorbus*; grasses at base and sides; rare *Seligeria*, bryophytes. Uncommon large *Oreohelix* n. sp. 13; heavily grazed; most talus mined for road fill. Snails hand collected. 10/20/1989 TF, EJ! [B28]

2161. Rapid River 6 (200). SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 12, T23N R1W, Heavens Gate 1979 quad., Idaho Co. E.-facing gully on trail switchback, ca. 0.1 mi. W. from gate in back of Rapid River Fish Hatchery (upstream), Nez Perce National Forest (Rapid River Wild and Scenic River). Elev. 2240-2280'. Open, dry, grassy; scattered *Celtis* and wood debris; mostly weathered bluish schist, limestone pebbles and cobbles. Very common large *Oreohelix* n. sp. 13; site formerly grazed. Snails hand collected. 10/2/1990 TF, GH! [B5]

2162. Rapid River 7 (201). SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 12, T23N R1W, Heavens Gate 1979 quad., Idaho Co. Shallow S.-facing shallow gully ca. 0.2 mi. W. of gate in back of Rapid River Hatchery (upstream) and ca. 120' above Rapid River, Nez Perce National Forest (Rapid River Wild and Scenic River). Elev. 2320'. Grassy gully with common *Celtus* and large wood and metal debris; scattered schist with common limestone cobbles; rather open and dry. Grazed; locally abundant large *Oreohelix* n. sp. 13. Hand collected. 10/2/1990 TF, GH! [B5]

2163. Sheep Gulch-lowermost 1.0 mile (202). Projected from SE corner; N $\frac{1}{2}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  to NW $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 2, T25N R1E, Lucile 1963 quad., Idaho Co. N.-facing steep limestone slope on S. side of Sheep Gulch, ca. 0.7-1.0 mi. E. from US95. Elev. 2120-2200'. Steep limestone slope and slope base; mostly open, dry, with grasses; weathered blue schist below; limestone outcrops above. Rare live and dead *Oreohelix idahoensis idahoensis* in 0.7-0.9 mi. from US95; *Oreohelix* n. sp. 20 in next 0.1 mi. All hand collected. 10/1/1990 TF, GH! [B17]

2164. Lower site of unnamed gulch between Sheep and Twiligar Gulch (203). NW $\frac{1}{4}$  SW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 35, T26N R1E, Lucile 1963 quad., Idaho Co. Small N.-S. gully on N. side of unnamed gulch between Sheep and Twiligar Gulch, ca. 1.2 rd. mi. from US95, before 1st road crossing of gulch. Elev. 2080-2100'. Small-scale limestone outcrops and very minor talus, mostly E.-facing; grasses, *Artemesia*, scattered *Celtus*, *Opuntia*; open and dry. Uncommon *Oreohelix* n. sp. 20; live only in rocky areas; long-dead shells for considerable area but this now heavily grazed. Snails hand collected. 10/1/1990 TF, GH! [B15]

2165. Upper site of unnamed gulch between Sheep and Twilegar Gulch (204). SW $\frac{1}{4}$  NE $\frac{1}{4}$  & NW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 35, T26N R1E, Lucile 1963 quad., Idaho Co. Head of S. branch of unnamed gulch between Sheep and Twiligar Gulch, starting at 2nd road crossing of gulch (highest), ca. 2.0 rd. mi. from US95. Elev. 2360-2580'. Steep slope with mixed deeply weathered schist and limestone bedrock exposure; very open and dry; mostly grasses, small *Artemesia*. *Oreohelix* n. sp. 20 long dead only; not collected; large area walked in detail without finding live specimens; heavily grazed. 10/1/1990 TF, GH! [B15]

2166. Upper Twilegar Gulch-lower road crossing (205). SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 35, T26N R1E, Lucile 1963 quad., Idaho Co. First (lower) road crossing of upper Twilegar Gulch, ca. 2.5 mi. off US95. Elev. 2680'. Mostly W.-facing, shallow gullies with limestone cobbles, boulders; some alluvium; mostly open, dry, grasses. No mollusks; heavily grazed. 10/1/1990 TF, GH! [B15]

2167. Upper Twilegar Gulch-upper road crossing (206). NW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 36, T26N R1E, Lucile 1963 quad., Idaho Co. Upper Twilegar Gulch at upper road crossing, ca. 3.4 mi. off US95, State of Idaho lands. Elev. 3000'. Mostly W.-facing limestone slope and minor talus; open, grassy, dry; some *Celtus*, *Artemesia*. Rare *Oreohelix* n. sp. 20; grazed. Hand collected. 10/1/1990 TF, GH! [B15]

2168. Lucile Caves ACEC-North of mouth of Crawford Creek (207). NE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  to NW $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 11, T25N R1E, Lucile 1963 quad., Idaho Co. Just E. of US95 and 0.1 mi. NW of Crawford Creek, beginning near cliff base and extending 0.2 mi. E., Lucile Caves ACEC (BLM lands). Elev. 1680-1800'. Limestone cliff base (W.-facing), partly shaded and wooded, to shallow, rather open and dry limestone outcrop with *Sorbus*; *Artemesia*, and grasses. Common but very local *Oreohelix idahoensis idahoensis*. Hand collected. 10/1/1990 TF, GH! [B17]

2169. Lucile Caves ACEC-1.4 miles south of Lucile (208). E $\frac{1}{2}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 11, T25N R1E, Lucile 1963 quad., Idaho Co. Short limestone cliff E. of US95 and 1.4 mi. S. of Lucile turnoff, Lucile Caves ACEC (BLM lands). Elev. 1720-1760'. Short limestone cliff with minor talus;

mostly bedrock, dry, grassy, open; some *Sorbus*, *Rubus*, *Rhus diversiloba*. Common long-dead and recently dead *Oreohelix idahoensis idahoensis*. 8/10/1989 TF, MF, EJ! [B17]

2170. Talus at mouth of Allison Creek (209). S $\frac{1}{2}$  SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 13, T24N R2E, Riggins Hot Springs 1964 quad., Idaho Co. S.-facing, dry, open granite talus on N. side of Allison Creek and FS221, ca. 0.2 mi. NW of Allison Creek Campground. Elev. 1940-2000'. Dry, open granite outcrops and talus with grasses, uncommon *Celtis* and *Opuntia*. Rare *Oreohelix jugalis* hand collected. 10/3/1990 TF, GH! [B31]

2171. Hanely Gulch 1 (210). NW $\frac{1}{4}$  SW $\frac{1}{4}$  NE $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 29, T31N R1E, Fenn 1963 quad., Idaho Co. Unnamed springs and seeps on N. side of the mouth of Hanley Gulch, NE side of Grave Creek Road. Elev. 2840'. Depth 0-2". Small cold springs and seeps, varies from open to *Rorippa* covered with scattered *Mimulus*. Spring not indicated on USGS map. *Allogona ptychophora ptychophora* and *Vertigo concinna* hand collected off vegetation in seeps. 9/29/1990 TF, GH! Rare *Allogona ptychophora solida*, *Allogona ptychophora ptychophora*, *Cryptomastix mullani mullani*, and *Deroferas* sp. on vegetation in seeps. *Physella* in seeps and springs. All hand collected. 4/24/1994 TF, EJ! [B3]

2199. Idaho. Marsh Cr.-Portneuf R.-Snake R.-Columbia R., Bannock Range, Marsh Valley. S.-facing steep talus slope on knob N. of Red Rock Pass and Red Rock Junction, W. of Calvin Road about 0.4 rd. mi. E. from US91 just before bridge at rd. mi. 28.9, upper end of Marsh Valley. Elev. 4840-4880'. Basalt talus. *Oreohelix "strigosa depressa"* hand collected. 11/02/1990 TF, EJ!

2475. Idaho. Warm Springs Cr.-Big Wood R.-Snake R.-Columbia R., Smoky Mountains. At base of outcrops along Forest Service road servicing campgrounds, N. of Warm Springs Creek, about 200 meters W. [of] where road starts near bridge over creek. At base of rock outcrops. Is it possible that the Forest Service road is FS227 or is it a side road? [ E.J. ] 2 *Oreohelix* collected live by hand. 06/10/1997 PHP! "I collected them last night on a rainy, warm evening. The density was higher than previously observed, approximately 10/m<sup>2</sup>." Seven live *Oreohelix* n. sp. adults and 2 dead; 7 live juvenile collected by hand. 08/04/1997 PHP!

2530. Bench Spring south Black Pine site. Zone 12: 335,500E 4,657,450N. NW $\frac{1}{4}$  SE $\frac{1}{4}$  NW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 7, T16S R30E, Black Pine 1973 quad., Oneida Co., Idaho. Great Basin, Curlew Valley. Bench Spring 1.0 mi. S. of Black Pine site on E. side of 38000 W. road, where road turns W. to Black Pine Mine. Elev. 4792'. Spring capped and dry. No molluscs. Spring is capped in a fenced area. Cow trough 20' below spring. 09/15/1996 JEJ!

2531. Stone Spring west of Black Pine Post Office. Zone 12: 335,850E 4,658,700N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 6, T16S R30E, Black Pine 1973 quad., Oneida Co., Idaho. Great Basin, Curlew Valley. Stone Spring above man made pond just W. of abandoned Black Pine Post Office on E. side of 38000 W. road. Elev. 4792'. Depth 0-1". Spring with small run into man made pond. Some *Rorippa* in pond. Land owned by Tim Anderson. No molluscs. Spring piped in the past. 09/15/1996 JEJ!

2532. Anderson Spring south of Black Pine Cemetery. Zone 12: 335,500E 4,656,500N. NE $\frac{1}{4}$  NE $\frac{1}{4}$  SE $\frac{1}{4}$  SE $\frac{1}{4}$  sec. 7, T16S R30E, Black Pine 1973 quad., Oneida Co., Idaho. Great Basin, Curlew Valley. Anderson Spring approximately 0.5 mi. S. of Black Pine Cemetery above two man made ponds. Spring with small run into two man made ponds. Thick *Rorippa* in spring run. Land owned by Tim Anderson. Four slugs hand collected from *Rorippa*. Spring source is piped by 8' pipe. 09/15/1996 JEJ!

2680. Idaho. Coeur d'Alene R.-Pend Oreille R.-Columbia R. E.-facing slope on W. side of Coeur d'Alene River along access road (W. side) off road, W. of Cataldo. Elev. 2160'. Coniferous forested slope. Land snails hand collected. 04/30/1994 TF, EJ!

2681. Idaho. Coeur d'Alene R.-Pend Oreille R.-Columbia R. N.-facing slope on S. side of Dudley Road, ca. 0.5 mi. from Latour Creek Road, S. of Old Mission. Elev. 2200'. Coniferous forested slope. No land molluscs seen. 04/30/1994 TF, EJ!